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Academy of Medical Sciences Of the USSR

History and Organization, 1944-1959

Galina V. Zarechnak, Ph.D.

Prepared in the National Library of Medicine for the
Russian Scientific Translation Program, Public Health
Service.

PUBLIC HEALTH MONOGRAPH No. 63

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Preface

The need for closer international cooperation in the fields of medical and biological research is felt very strongly throughout the world. An important prerequisite for the development of successful relationships, however, is a knowledge and understanding of biomedical research abroad, its organization and administration.

In recent years the USSR has captured the attention of Western scientists by the great volume of research conducted there and by its achievements in biology and medicine.

This monograph, assembled from both Russian and non-Russian literature available in this country, attempts to describe the organization and activities of the greatest scientific medical institution of the USSR. Any attempt of this kind is bound to show gaps due to the lack of direct contact and comprehensive information in obscure areas. A similar study written in the Soviet Union would probably have more concrete and recent statistical data, fuller biographical information on Academy members, and more precise figures on the Academy's institutes and laboratories. Nonetheless, compilation of this work in the United States may have advantages. First, closeness to one's own work very often prevents one from seeing it in proper perspective. Second, the possibility of using sources published in other countries and reports from foreign observers, as well as Soviet sources, may preclude a one-sided presentation. On the whole, however, the author has tried to refrain from evaluating and merely to describe the structure and functions of the Academy of Medical Sciences. The information was taken primarily from Soviet sources, such as *Vestnik Akademii meditsinskikh nauk SSSR* (*Journal of the Academy of Medical Sciences, USSR*) and *Meditsinskii rabotnik* (*Medical Worker*), a semiweekly newspaper.

This publication is intended for physicians, medical research workers, medical librarians, and others interested in medical research in the Soviet Union—its planning and organization, its outstanding scientists, and its major achievements as reflected in the activities of the Academy of Medical Sciences. The Academy occupies a key position in medical research, and understanding its operation is essential to understanding medical research in the Soviet Union.

The review covers the 15 years from the founding of the Academy in 1944 to December 1959. A special effort has been made to bring all information up to date whenever possible. The organizational charts will assist in understanding the structure of the Academy. The list of members of the Academy represents a directory of the most outstanding medical researchers in the USSR and should be helpful in identifying individual scientists and their respective areas of research.

This work is an extension and expansion of the author's master's thesis presented to the Catholic University of America. In addition, many individuals assisted in the preparation of this new treatise. Special thanks go to Dr. Michael B. Shimkin, National Cancer Institute, for his

indispensable advice and recommendations, and to Scott Adams, who reviewed and edited the manuscript. The preliminary organization of the available materials by Zelda D. Knowles has been helpful. Of considerable value were suggestions and additional data provided by David P. Gelfand of the Russian Scientific Translation Program, National Institutes of Health.

The use of facilities and services of the National Library of Medicine is greatly appreciated, as well as the encouragement received from its director, Dr. Frank B. Rogers, and Samuel Lazerow, and the valuable comments offered by Leslie K. Falk.

The monograph is published by the Russian Scientific Translation Program of the Public Health Service as a contribution toward informing the American scientific community of the organization and accomplishments of Soviet medical research.

Transliteration is that of the Library of Congress with omission of ligatures and diacritical marks.

GALINA V. ZARECHNAK
National Library of Medicine

Contents

	<i>Page</i>
Preface	iii
I. Background of medical research in the USSR	1
Origin of organized medical research	1
Development after the October Revolution	2
II. Establishment of the AMS	3
General purpose and functions	4
Relationship to the Ministry of Health	4
Relationship to other agencies	5
III. Organization and staff	5
General Assembly	6
Presidium	6
Membership	6
Responsibilities	8
Administrative organs	8
Research and planning organs	9
Control organs	10
Service organs	10
Special agencies	11
Scientific departments	11
Research institutes	12
Gamaleia Institute	14
Institute of Experimental Medicine	15
Cancer Institute	15
Institute of Infectious Diseases	15
Institute of the Brain	15
Institute of Virology	16
Institute of Oncology	16
Institute of Pathology and Therapy	16
Pavlov Institute	16
IV. Academy personnel and activities	17
Membership	17
Elections	17
Rights and duties	17
Staff positions and titles	18
Training and degrees	18
Degree of candidate	19
Doctor of medical sciences	19
Clinical residency	20
Other obligatory courses and training	20
Academic status and privileges	21
Publication of information	22
Conferences and expeditions	24
V. Research planning	24
The plan and its purpose	24
Types of plans	25
Responsibility and composition	26

	<i>Page</i>
Difficulties and deviations in planning	27
Reorganization of 1957	28
VI. Trends in medical research	29
Post-Stalin era	29
Highlights in research	30
Physiology	31
Resuscitation following clinical death	33
Surgery	33
Anesthesiology	34
Infectious diseases and parasitology	34
Hygiene and prophylaxis	35
Acclimatization	35
VII. Objectives of the 7-year plan, 1959–65	36
VIII. Summary	37
References	39
Appendix A	43
Appendix B	44

I. Background of Medical Research in the USSR

Origin of Organized Medical Research

Established in 1944, the Academy of Medical Sciences of the USSR (Akademiia meditsinskikh nauk SSSR) is a comparatively new institution. But the name "Academy" and some features of the traditional academy system were taken from the well-established pattern of the European academies.

The Academy of Medical Sciences (AMS) must not be confused with its larger and more widely known sister institution, the Academy of Sciences of the USSR, which was the model for its organizational structure. The Academy of Sciences was the first Russian institution in which serious and organized studies in biology and medicine were conducted. Created on January 27, 1724, by Peter the Great and opened after his death in 1726 as the Imperial Academy of Sciences, it was the embodiment of a great dream of a great monarch. Through the Academy, Peter intended to give Russia the best of Europe's cultural achievements and to create a fertile soil in which native science could grow.

Medicine was among the sciences that were greatly influenced by Peter the Great. On his visits abroad he studied not only shipbuilding, for which he is so praised, but also the sciences and arts. Impressed by the Academy of Sciences in Paris, he decided to adopt the same pattern for Russia.

Many scientists, including physicians, surgeons, and pharmacists, were invited to Russia, and Russian physicians were sent abroad for medical training. In this way the systematic and organized training of Russian medical scientists began.

The close ties established with European scientific institutions lasted for two centuries, to be interrupted only by the October Revolution in 1917. Scientist-physicians have played an important role in the Imperial

Academy of Sciences. Its first president was L. L. Blumentrost, physician to the Czar. Many prominent Western scientists, including Thomas Huxley, Charles Darwin, Louis Pasteur, and Daniel Bernoulli, physicist and mathematician, were members of the Academy. The Academy had a friendly relationship with the young American Nation; indeed, Benjamin Franklin was a member.

After Peter the Great, Russian medicine developed rapidly, and at the end of the 19th century it was approaching the level of that of other civilized countries. The 19th century in Russia is noted for a great number of brilliant names in medicine. The great school of Russian physiology, emphasizing the role of the central nervous system, was initiated by I. M. Sechenov (1825–1905). The names of the famous clinicians S. P. Botkin and G. A. Zakhar'in-Botkin are familiar to Westerners through use in Botkin's disease (infectious hepatitis). Other brilliant men of science in this era were Dokuchaev in pharmacology, Pirogov in surgery and military medicine, Timiriazev in botany, Bekhterev in neurology and psychology, and Mechnikov (one of the early Nobel prize winners) in zoology and pathology.

Although these famous names were well known to specialists in the field, Westerners at large tended to underestimate Russian science. This was due to several factors, such as the language barrier, the remoteness of Russia from European research centers, and travel difficulties. In 1904, however, I. P. Pavlov (1849–1936) won the Nobel prize in medicine, and through his international reputation the achievements of Russian scientific endeavor became better known to the West.

In addition to the Academy of Sciences, which concentrated more on the biological sciences than on medicine, other scientific medical institutions were established. The

most important was the Institute of Experimental Medicine (Institut eksperimental'noi meditsiny, known as IEM) in St. Petersburg (Leningrad), founded in 1890 with the collaboration of Pasteur and Koch. For many years, it was the only large institution of world repute in Russia devoted to problems of theoretical medical research. It had departments of physiology (headed by I. P. Pavlov), biochemistry, microbiology (headed by the famous microbiologist S. N. Vinogradskii), anatomy, pathology, epidemiology and zoonoses, and a Pasteur station.

In 1907 I. P. Pavlov was asked to establish a physiological laboratory in the Academy of Sciences. Later this laboratory was reorganized into the Physiological Institute for the Study of Higher Nervous Activity, a center for research on conditioned reflexes.

IEM cooperated closely with Western scientific institutions. It was almost mandatory for Russian scientists to pursue postgraduate studies in West European countries, especially in France and Germany. Science was regarded as truly international in character. In theory and in practice, therefore, Russian medicine during the Czarist period was cosmopolitan and objective, and free in regard to scientific methodology.

Development After the October Revolution

Medical research after the October Revolution may be divided roughly into four main phases: from the Revolution until World War II, the war period, from 1946 until 1953, and the post-Stalin period. These phases present many differences of research methodology and accomplishment, but in all four Soviet political leaders and scientists stressed over and over again one common principle: science cannot and must not be divorced from politics. This tenet of the Bolshevik Party was made clear by Lenin in 1913, when he stated: "There cannot be impartial social science in a society founded on class struggle" (1). The same principle became policy for the country's scientific institution, the Academy of Sciences (2):

We, the Soviet scientists, are convinced that the entire experience of history teaches that there does not exist and cannot exist in the world a science

divorced from politics. The fundamental question is with what kind of politics science is connected and whose interests it serves—the interests of the people or the interests of the exploiters.

This principle is the abyss which separates Russian medicine of the Soviet period from the prerevolutionary tradition. "The October Revolution of 1917," states Soviet Professor Fersman in *Soviet War News*, "closed the pages of the past. It opened wide the gates to knowledge, breaking down the caste system of Tsarist science, replacing it by science of a new epoch, with a new style, new ideas and new methods of work" (3).

For many years after the Revolution, Russian scientists, educated according to tradition and still in contact with their universities and professors abroad, remained faithful to the idea of a "pure science." But they grew older, and a new generation of scientists was slow to arrive because of so many turbulent years of war, revolution, purges, deportations, collectivization, and other "growing pains" of the new State. When the Academy of Medical Sciences was founded, 75 percent of its members were survivors of the prerevolutionary generation of Russian intellectuals.

In the first postrevolutionary period, scientific research underwent many fundamental changes. The Soviet Government regarded science, if based on materialistic principle, as an aid to achieve its far-reaching political goal. Therefore, it increased greatly the number of medical schools, libraries, and scientific institutions. While the humanities were remolded according to new political principles, the development of physical sciences proceeded with less interference. Excellent results were achieved in some fields, for instance, biology, in which Russian scientists, led by the famous geneticist N. I. Vavilov, were second only to those in the United States.

However, political purges during the thirties brought an end to the little traditional scientific research and international cooperation that still existed. The most flourishing field, genetics, suffered the most heavy blow. Many scientists were liquidated (2, 4), and Vavilov himself was arrested in 1939 and

sent to Siberia, where he died in 1942. Lysenko, chief spokesman for the new line in genetics, replaced Vavilov as head of the Lenin Academy of Agricultural Sciences and of the Institute of Genetics. After the 1948 Session of the Academy of Agricultural Sciences he became the sole authority in biological research (5, 6).

A great change came with World War II. Military alliance with the Americans and British stimulated cultural and scientific cooperation. Soviet scientists and artists visited Great Britain and the United States, and societies of friendship between the West and the USSR were created, pouring new optimism into the thinking of both the Western and the Russian scientists.

During this time the Academy of Medical Sciences was established and was hailed by many Western medical organizations and scholars. This came to an end almost as soon as the war was over. From 1946 to 1953, a setback again occurred in respect to free scientific investigation. The session of the Academy of Agricultural Sciences in 1948 and the joint session in 1950 of the Academy of Sciences and the Academy of Medical Sciences on the teaching of Pavlov are examples of Party-controlled channeling in the fields of biology and medicine. The recent era of scientific cooperation and international exchange has opened unprecedented ways and possibilities for medical research, and it is influencing the work of the Academy of Medical Sciences.

II. Establishment of the AMS

The Academy of Medical Sciences of the USSR was established near the end of World War II. The tremendous wartime responsibilities of Russian physicians, experience gained on the battlefields, and the close cooperation with Western doctors and the International Red Cross revealed many deficiencies in Russian medical research and service, which for many years had been cut off from Western medicine. The chief deficiencies were in the fields of medical technology, surgical instruments, and drugs. The need to accelerate medical research, to provide more and better drugs, and to develop better equipment was apparent. A well-organized central institution consisting of leading specialists in all fields of medical research, which would organize medical services for the defense of the country during the war years and prepare high-level scientists in time of peace, was considered the answer to the urgent problem.

The base for such an institution already existed in the old Institute of Experimental Medicine which in 1932 had been reorganized

into the All-Union Institute of Experimental Medicine and later relocated in Moscow. By 1944, it consisted of 13 divisions in Moscow and 6 in Leningrad, and a number of research institutes and laboratories. To these, institutes from the People's Commissariat of Health, USSR (Narkomzdrav), and several new institutes were added, thus creating the Academy of Medical Sciences.

On June 30, 1944, by Decree No. 797 of the Council of People's Commissars (Sovet narodnykh kommissarov, or Sovnarkom), the constitution of the AMS was approved. The director of the VIEM, N. I. Grashchenkov, became a member of the Presidium of the new Academy. The vice-commissariat for medical research and education of Sovnarkom was abolished and its research functions were transferred to the AMS.

The AMS emerged as a highly centralized institution directly subordinate to the People's Commissariat of Health, later renamed the Ministry of Health (Ministerstvo zdoravookhraneniia SSSR, or Minzdrav).

General Purpose and Functions

The general purpose and functions of the Academy, as stated in its constitution, are as follows (7):

1. The Academy of Medical Sciences is the highest scientific institution in the field of medicine in the USSR, organizing the most outstanding scientists in the country. The Academy is unconditionally subordinate to the Ministry of Health to which it submits annual reports on its activities.

2. The basic purposes of the Academy are:

- a. To solve questions in the theory and practice of medicine, to contribute to the continued growth of medical sciences in conformity with the needs of public health, to solve the problems of medical sanitation, to make provision for the defense of the country, and to carry out the assignments of the Ministry of Health and higher governmental agencies.

- b. To formulate the principal problems in medical science, to determine their priority for medical scientific institutions, and to coordinate the work of the medical scientific institutions.

- c. To give scientific approval to major discoveries and theories in the field of medicine, and to resolve questions of practical application of new methods of treatment.

- d. To examine problems in medicine assigned by the Government and the Ministry of Health.

- e. To adjudge awards established by the USSR Government for outstanding scientific work.

- f. To train qualified scientific workers in the field of medicine.

3. In order to fulfill these purposes, the Academy shall:

- a. Establish, with permission of the Council of Commissars of Public Health, research institutes in the field of medicine.

- b. Publish annually a list of problems for scientific investigation in medical research institutes and examine and accept plans and reports of scientific work performed in these institutes.

- c. Establish and maintain scientific contact with the Academy of Sciences, USSR, Academies of Sciences of the Soviet Republics, and scientific institutions and societies in the Soviet Union and in foreign countries.

- d. Publish journals, symposiums, monographs, dissertations, and other approved scientific work.

- e. Call general sessions of the academicians and conferences, issue announcements of meetings for hearing and evaluating scientific reports and results of the work of the Academy.

- f. Create permanent and temporary commissions for approbation of discoveries and theories in the field of medicine, and for examination of questions in medical science and public health.

- g. Administer, in institutes under its jurisdiction,

the training of aspirants for degrees of candidate in or doctor of medical, biological, and pharmacological sciences; conduct examinations of the dissertations; and award the above degrees at meetings of the councils of the institutes.

In November 1944, 60 leading physicians were appointed by the Council of People's Commissars to form the core of the Academy. The organizational committee in charge of the Constitutional Assembly of the Academy submitted the first list of proposed candidates for active members for the approval of the People's Commissariat of Health. From December 20-22, 1944, a solemn session of the Constitutional Assembly was held in Moscow. Here, the Presidium, the bureaus (executive committees) of the departments, and the directors of the institutes were elected, and vacancies to be filled later were announced (8, 9).

The Western medical world welcomed wholeheartedly the birth of the Academy. There were telegrams from the Royal Medical and Surgical Society of London, the Royal College of Surgeons in London, the U.S. National Institutes of Health, and other foreign medical institutions. With the meeting of the Constitutional Assembly, the foundation of the Academy of Medical Sciences was completed. Headquarters of the AMS were established at Solianka 14, Moscow.

Relationship to the Ministry of Health

All medical service, in common with other aspects of life in the USSR, is highly centralized. The Ministry of Health is the Government agency charged with the maintenance of the nation's health and the conduct of its medical research. From its headquarters in Moscow, it exercises its authority through the ministries of health of the Union Republics. Its sphere of interest encompasses all medical services, medical education, medical research, and practical utilization of medical discoveries.

Medical research is conducted in institutes, which are grouped under three systems: (a) institutes of the AMS, charged chiefly with broad theoretical problems, such as tuberculosis and cancer and, recently, with the overall leadership of all medical research;

(b) the central institutes of the Ministry of Health, where more specific problems are attacked, such as diseases of the eyes, ears, nose, and throat, traumatology, and plastic surgery; (c) the research institutes of the ministries of health of the Union Republics, where special local problems are emphasized (10).

The AMS was subordinate administratively to Collegium of the Ministry, which had authority to change AMS statutes and reorganize AMS institutes, modify training requirements for personnel, construct new buildings, improve technical equipment, and procure scientific literature and financial appropriations (fig. 1). The Academy budget is included in the overall budget of the Ministry (8). Until recently in research matters, the liaison body between the Ministry and the Academy was the Scientific Medical Council of the Ministry. Both the AMS and the Scientific Medical Council were in charge of planning and coordinating medical research throughout the country, with the Scientific Medical Council the chief authority. In 1957 the AMS was given sole responsibility for planning medical research (11), and in 1958 it was decided to abolish the Scientific Medical Council altogether and transfer all its functions to the AMS (see p. 28).

Members of the Scientific Medical Council were drawn from various medical and scientific institutions, including the Academy, often its Presidium. Thus, Council membership revealed many interrelationships of personnel and functions. In 1946, for example, N. N. Burdenko was both chairman of the Scientific Medical Council

and president of the Academy, I. G. Rufanov and A. I. Nesterov were members of both the Scientific Medical Council and the Presidium's Commission for Scientific Planning, and F. G. Krotkov was both deputy minister of health and a member of the AMS Presidium.

Relationship to Other Agencies

By statute the AMS "shall establish and maintain scientific liaison with the Academy of Sciences of the USSR, the Academies of Sciences of the Union Republics, and scientific institutes and societies of the USSR and foreign countries" (8). Unlike the Academy of Sciences, the AMS does not have a network of affiliates in the Union Republics. Liaison with non-Academy medical institutes is obtained by electing Academy members from various regions and by establishing close working relations with schools of higher medical education. In addition, scientific expeditions and conferences held in different areas of the USSR provide an effective form of liaison with the institutes, scientists, and physicians in distant parts of the country. Through open meetings, personnel of local medical institutes are informed of the work of the AMS, and the Academy is acquainted with the achievements of local medical services and research.

Today, however, with a considerable expansion of the Academy's responsibilities, there is a growing feeling that affiliates of the AMS in all Union Republics would provide better control of medical research and services throughout the country.

III. Organization and Staff

The official statute which presents the Academy of Medical Sciences as a genuinely democratic organization, with general elections, secret ballots, assemblies, and councils does not accurately reflect the status of the institution. It is tightly controlled by the

Government through the Ministry of Health. The official blueprint does not always correspond to reality and the Academy statute must be supplemented by a number of additional facts if a true picture of the Academy organization is to be constructed.

General Assembly

According to the statute, the General Assembly (*Obshchee sobranie deistvitel'nykh chlenov*) is the highest administrative body of the Academy. It is composed of active members. The Assembly's functions are to formulate and supervise all research work of the Academy, to account for the work of each institute and of individual AMS members, and to elect all active and honorary members, the Presidium, the president, and the academician-secretary. It also approves the corresponding members, personnel of the three departmental bureaus, and the departmental academician-secretaries after their election by the departmental general assemblies, and confirms institute directors, appointed by the Presidium (8).

Two-thirds of all active members are required for a quorum. Questions are decided by simple majority vote of the active members. Corresponding members have an advisory vote only. New members are elected by secret ballot; approval is given by an open vote by raising hands. The General Assembly meets annually or when called by the Presidium. However, there have been only 13 sessions since the Academy was founded in 1944. The sessions are attended by 1,500 to 2,000 participants, including corresponding members, representatives of public health agencies, scientists, teachers of medical schools, and physicians (12).

In spite of its seemingly important functions, the powers of the General Assembly are limited. First, it is under control of the Council of Ministers and thus subordinate to the Government. Second, it is controlled by the Presidium of the Academy, which, although nominally responsible to the General Assembly, has in reality more authority. Furthermore, the Assembly meets too seldom to play an important role. It is convened by the Presidium "when required" and follows the program laid out for it in advance.

By statute, the General Assembly formulates all research plans. Actually, it merely discusses plans presented by the Presidium, as well as annual reports dealing with the

Academy's work as a whole, and automatically approves them.

Presidium

Membership

The Presidium is the executive body of the Academy. It performs all the administrative work, acts for the General Assembly when the Assembly is not in session, and represents the Academy in its relations with governmental and other agencies. The Presidium is composed of 11 members: the president of the Academy as *ex officio* chairman of the Presidium; 3 vice-presidents, one of them representing military medicine; the academician-secretary; 3 secretaries, each representing a department of the Academy; and 3 to 7 members at large, originally elected by the General Assembly for a 4-year period, now changed to 3 years (8).

The first president, elected in 1944, was N. N. Burdenko, a famous surgeon. The second president, elected in 1946 after Burdenko's death, was a leading pathologist, N. N. Anichkov, and from 1953 to 1960 the president was A. N. Bakulev, a well-known surgeon and the editor of the Soviet Medical Encyclopedia. The newly elected president is N. N. Blokhin, a leading oncologist. The president, vice presidents, and academician-secretary must be approved by the Government. Today, in selecting members for the Presidium greater emphasis is given to medical research and its planning. Each Presidium member acts as "curator" for one or two of the Academy's research problems. (See section on Research Planning, p. 24.) The composition of the newly elected Presidium (1960) is as follows:

President: N. N. Blokhin

Vice presidents: V. D. Timakov, V. N. Orekhovich
Academician-secretary: V. M. Zhdanov

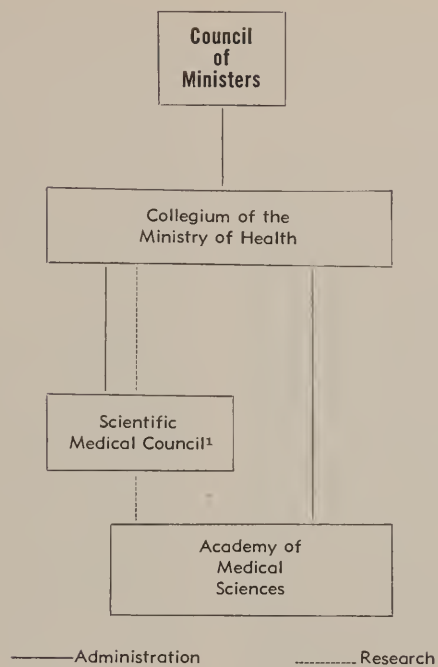
Members at large: V. V. Parin, G. P. Rudnev
Academician-secretaries of the departments:

Clinical Medicine: V. Kh. Vasilenko

Medical and Biological Sciences: N. A. Kraevskii

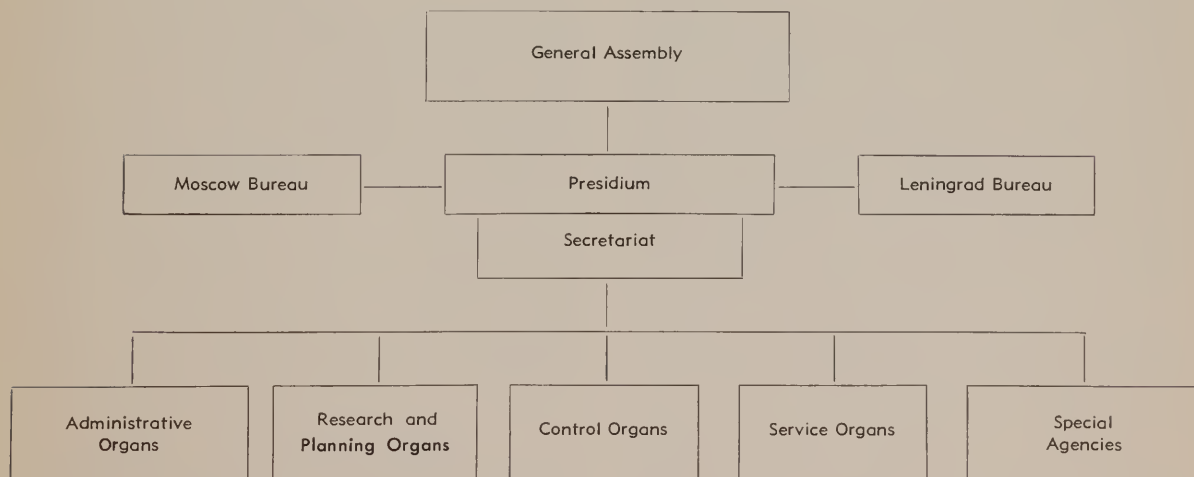
Hygiene, Microbiology, and Epidemiology: G. V. Vygodchikov

Figure 1. Relationship of the Academy of Medical Sciences to the Ministry of Health



¹During the printing of this manuscript the Scientific Medical Council was abolished.

Figure 2. Organization of the Academy of Medical Sciences: Top level



Responsibilities

The Presidium is the authority in all questions of management, such as approval of organizational changes and reports of the departments and institutes of the Academy. It compiles the annual budget and financial reports and develops a general work plan for the Academy.

The Presidium also organizes and supervises medical research by calling meetings, conferences, and consultations to discuss various research problems. It organizes printing of scientific works and is in charge of disseminating the results of scientific achievement. Two of the most important functions of the Presidium are to appoint and dismiss AMS institute directors and deputy directors, and to approve the personnel of the institutes' scientific councils and the heads of divisions and laboratories. The Presidium is also in charge of training and assignment of AMS personnel and of awarding prizes for outstanding work (8).

Several agencies in charge of various tasks are directly responsible to the Presidium. They can be divided into five general categories: (a) organs of administration and management, (b) organs of research and planning, (c) organs of control, (d) organs of services, and (e) special agencies (fig. 2).

Administrative Organs

Since the Presidium is located in Moscow, a special body was established to deal with organizational problems of the Leningrad institutes. In 1946, the Leningrad Bureau was set up for this purpose. In 1948, to free the Presidium of comparatively minor problems, it was necessary to establish also a Moscow Bureau. Both bureaus are subordinate to the Presidium and supplement it chiefly in current management matters.

The nucleus of the Presidium and its executive organ is the Secretariat, directly subordinate to the president and the academician-secretary of the Academy. The Secretariat screens all orders and communications to and from the Presidium as well as material released to the press and radio. In this way it censors and controls the communications of the Academy. It also formulates quarterly work plans, prepares the agenda for

Presidium meetings, and maintains the Presidium files (8).

The most powerful man in the Presidium is the academician-secretary. He directs the Secretariat of the Academy and all activities in various Academy units through the three departmental academician-secretaries and through the scientific secretaries who are responsible for research planning. He is in charge of writing the annual report of the Academy's work (8), which consists usually of evaluation of past achievements, criticism of all deviations, and Party directives for future work.

Although the Academy's bylaws do not require that the academician-secretary be a Party member, it is doubtful that a non-Party member would be entrusted with such a responsible position. In spite of Party membership and the great authority of the academician-secretary, he is not guaranteed against a possible demotion or purge on the grounds of ideological deviation. V. V. Parin, the first academician-secretary of the AMS, is said to have vanished from the academic scene in 1947 for advocating exchange of scientific information with Western democracies. He reappeared only a few years ago and is now in charge of the project he advocated in 1947.

The Management Department (*Upravlenie delami*) has charge of all economic affairs of the Academy. Various subdivisions, laboratories, and workshops provide for the needs of the institution and its members. The Supply Division (*Otdel snabzheniia*) purchases, among other things, medical equipment, chemicals, and experimental animals. In the field of construction, a trust (*akademstroï*) was established to erect new buildings and repair old ones. In 1946 it employed more than 400 workers. The Experimental Plant (*Opytnyi zavod*) makes apparatus and instruments. The Medical Welfare Division (*Lechebno-bytovoi otdel*) provides medical and recreational services for the Academy workers, including rest home facilities in resorts and country cottages. There are also animal-breeding nurseries (*zhivotnovodcheskie pitomniki*) which supply purebred experimental animals, such as rabbits, guinea pigs, rats, and mice.

The Personnel Department (Upravlenie kadrami) of the Presidium is an important part of the Academy apparatus, since it controls the training and placement of scientific personnel. It is headed by a chief who is directly subordinate to the academician-secretary. Although Academy institutes, assisted by their respective departments, are free to select their own specialists and plan their own training programs, the Personnel Department supervises the appointments, which must be approved by the Presidium (8).

The Division of Supervisory Personnel (Otdel rukovodiashchikh kadrov) is responsible for the efficient utilization of top-level specialists. It defines training requirements for highly qualified Academy scientists and attempts to build up a reserve of supervisory personnel.

The Division for Training and Assignment of Scientific Personnel (Otdel podgotovki i raspredeleniia nauchnykh kadrov) draws up AMS recruiting quotas, controls the quality and length of training, and assigns those who have completed the prescribed work to positions in the Academy. Personnel are trained in three agencies of the division: (a) the Chair of Philosophy (Kafedra filosofii), which is responsible for ideological and political education of scientific personnel and for discussion and interpretation of theoretical problems of current medicine or Party decisions; (b) the Chair of Foreign Languages (Kafedra inostrannykh iazykov), which provides training in languages, especially English and German, which are obligatory for the degree; and (c) the Moscow Medical School No. 36 which trains laboratory technicians.

The Division of Personnel Registration (Otdel ucheta kadrov) keeps records of the personnel, compiles lists of specialists with higher education and reserve personnel, and writes reports of the activity of individual workers of the Academy.

Research and Planning Organs

The Department for Scientific Organization (Nauchno-organizatsionnyi otdel) is a consultative organ of the Presidium, headed by the vice president in charge of scientific

planning. The activity of the department has three aspects: evaluation of the dissertations and scientific work of individual scholars by the Qualification Commission, liaison with the medical press, and planning of research by studying trends of scientific research and guiding its methods.

Detailed planning and evaluating of the Academy's scientific research is carried out by the Commission for Scientific Planning. It screens the departmental plans and recommendations of the commissions on problems (see below) and compiles annual and long-range plans for the entire Academy. It also coordinates plans with those of other institutions, reviews and approves their plans, and gives methodological and consultative help.

Commissions on problems are each responsible for one particular problem. Such a commission is composed of several specialists and is under the supervision of a member of the Presidium, appointed curator for the problem. The curator is responsible to the Presidium for the commission's activity.

The problem commission is the basic scientific organizational form for coordinating scientific research on problems. Its chief function is to consolidate the studies on various aspects of the given problem conducted in several institutions and to prepare a composite (svodnyi) thematic plan covering work by many research units. All such thematic plans drawn up by the commissions on problems are in turn coordinated by the Commission for Scientific Planning.

The Division for Planning and Coordination of Scientific Research (Otdel planirovaniia i koordinatsii nauchnykh issledovaniia), another coordinating agency, is concerned chiefly with the application of the achievements of medical research to public health practice. It recommends that problems urgent to public health protection be included in current planning, decides which problems should be given highest priority, and establishes an annual schedule for meetings and conferences.

The Division for Financial Planning (Planovo-finansovyi otdel) deals with the problems of budget planning and fiscal affairs. It submits quarterly and annual financial reports to the Ministry of Health.

The annual budget of the AMS is part of the overall budget of the Ministry of Health. The Academy works out estimates and a detailed plan of expenditures with allocations to the individual institutes, and submits them to the Ministry for approval. In 1946, the financial plan for the maintenance of the Academy amounted to 170,290,000 rubles (\$42,572,500 at the official rate of 4 rubles per dollar). It was broken down as follows (13a):

	Rubles
Salaries, wages, and extra charges (nachisleniia)	109,960,000
Administration and management cost	9,770,000
Scientific research	9,950,000
Equipment and inventory	16,890,000
Training of scientific cadres	3,650,000
Feeding the sick	11,320,000
Books	690,000

The expenditure for equipment was unusually high because in 1946 the Academy was still in the organizational stage.

The allocations are growing steadily. For 1959, 228.3 million rubles were provided and for 1965, the last year of the current 7-year plan, the planned allotment is 300 million rubles (14).

Budgets of individual institutes may vary, depending on their size and current need. For most institutes the planned allotment is from 7 to 15 million rubles. In addition, special appropriations for new buildings, equipment, or other special needs may be received if conditions warrant. Some institutes have a supplementary income derived from supplying products to non-Academy institutes. For example, the Gamaleia Institute has a 10 to 12 million ruble annual income from serums and vaccines produced for the Ministry of Health. Some of this income may be added to the Institute's funds.

Control Organs

In addition to the Secretariat of the Presidium, which is as much a control body as an administrative organ, there are several agencies charged with controlling various aspects of the Academy's work and its membership. The most important of these agencies is the Party Bureau (Partbiuro).

Communist Party members within the Academy are organized in units, headed by the Party Bureau of the Presidium. The main task of the Party Bureau is to supervise implementation of Party orders and Government policies. It directs criticism of the Academy organs, including the Presidium and of individual scientists and exposes deviations from the Party line. In scientific councils, Party representatives make up about 25 percent of the membership and thus influence to a great extent the work of the councils (15). In 1959, the secretary of the Party Bureau was P. P. Bondarenko, who was also head of the Academy's Chair of Philosophy and the secretary of the Editorial Board of the *Journal of the Academy of Medical Sciences, USSR*. The Party Bureau works closely with other organs of the Academy, thus controlling all ideological matter.

The Presidium's Trade Union organization controls the productivity of labor. It initiates "socialist competition," a well-known method to increase production, checks on the accomplishments of Academy units, and spurs the institutes as well as individual scholars to greater efforts (16).

The Special Division (Spetsotdel) is in charge of classified material and work of military importance (8). It is probably a branch of the KGB, Committee on State Security (Komitet gosudarstvennoi bezopasnosti), or the secret police. It keeps records of all personnel and administers security regulations.

Service Organs

Subordinate to the Presidium are several service agencies concerned chiefly with providing technical material and literature to the scientists and with the dissemination of scientific knowledge. The Division of Scientific Cinephotodocumentation (Otdel nauchnoi kino-fotodokumentatsii) produces medical documentary films. The Scientific Archives (Nauchnyi arkhiv) collects rare literature, pictures, and documents of medical interest.

Each institute has a library with a special collection in the particular subject field. In addition, there is a central library (fundamental'naia biblioteka) which unifies and

coordinates the work of all institute libraries and provides centralized services in acquisition, book processing, and biographical and reference work. It is also in charge of book exchange with other libraries in the USSR and abroad. According to the data given in the Great Medical Encyclopedia in 1957, the library of the AMS has a total of 1,200,000 items. The collection, however, is dispersed throughout all the institutes of the Academy.

Special Agencies

In addition to the permanent organs of the Presidium, there are many agencies set up for special tasks. They may be attached to the Presidium or to one of the departments or to an institute. Their activities may be limited to the Academy, or they may extend to liaison with outside agencies. The number of such special organs, as well as their names, varies.

Before 1954, these councils (*sovery*), committees (*komitety*), and commissions (*komissii*) numbered 31; in 1955 there were only 16 (17). Each council, committee, or commission deals with one special problem, usually on an interdisciplinary and interinstitutional basis. In size they range from 2 to 30 persons. Two such agencies maintain liaison with the military-medical service of the Armed Forces: the Army and Navy Research Council and the Military Commission. They recommend implementation of medical plans of interest to the Armed Forces. One of the most important councils subordinate to the Presidium is the Editorial and Publishing Council (*Redaktsionno-izdatel'skii sovet*), known as RISO. It is in charge of all publishing activity of the AMS. (See p. 22 for further information on RISO.)

Scientific Departments

The actual research work of the AMS is organized in three departments, each of which is composed of several institutes and laboratories.

The Department of Medical and Biological Sciences (*Otdelenie mediko-biologicheskikh nauk—OMBN*) represents the various branches of preclinical medicine, such as physiology, morphology, biochemistry, and

pharmacology. This department has been reorganized frequently as a result of the controversial nature of the theoretical aspects of these subjects. Here the emphasis on the theories of Michurin, Pavlov, Lepeshinskaia, and others led often to changes in structure and personnel, for example, abolishing of the Institute of Morphology in 1951. All institutes of this department give special attention to physiological and pathological processes.

The Department of Clinical Medicine (*Otdelenie klinicheskoi meditsiny—OKM*), which includes half of the Academy members, is the largest of the three departments. It emphasizes organization of medical research in public health and medical service to workers in heavy industry and agriculture. All institutes of this department have clinical as well as theoretical and experimental divisions.

The Department of Hygiene, Microbiology, and Epidemiology (*Otdelenie gigieny, mikrobiologii i epidemiologii—OGMiE*), as the name indicates, concentrates on problems of public health and preventive medicine, sanitation, infectious disease, and epidemics.

A department follows the general organizational pattern of the Academy (fig. 3). Just as the General Assembly of the Academy is the highest authority for the entire Academy, the general assembly of the department is the highest authority on the departmental level. The general assembly of the department consists of active, honorary, and corresponding members. It too is scheduled to meet annually and approves, rather than directs, all work within the department. A department's real administrative organ is the bureau, which is elected for 2 years by the general assembly of the department and approved by the General Assembly of the Academy.

Each department has an academician-secretary, a deputy academician-secretary, a scientific secretary, and a six- to eight-member bureau. The academician-secretary, who must be an active member, is the chief executive and spokesman for his department. He is elected for a 2-year term by the general

assembly of the department and is responsible to the Presidium of the Academy between departmental assembly sessions.

The main function of the bureau is to organize, supervise, and evaluate scientific research in the particular field, including research performed in institutes and laboratories of other departments in which the work pertains to its field of specialization. The bureau is also in charge of organizing conferences, lectures, and expeditions and supervising training of graduate students in the department.

Each department has a scientific council (*nauchnyi sovet otdeleniia*), which is an advisory body composed of the scientific secretary of the department and a dozen or more of its members. Its major functions are to evaluate dissertations for higher degrees and to report on the selection and training of personnel for the institutes.

In recent years the departmental structure has been criticized for overcentralization. The grouping of institutes under the departments has been called an "organized disintegration," which isolates institutes from each other and makes interdisciplinary research difficult (18). Subordinate to each department are various commissions and committees, responsible to the bureau of the department and some independent laboratories.

Research Institutes

In 1946, the AMS comprised 25 research institutes, all except 3 located in Moscow. In the next 12 years institutes were dropped from the Academy and new ones came into being. Others have been reorganized or merged. In 1959 there were 28 institutes within the Academy, most of them in Moscow, several in Leningrad, one in Kiev (Institute of Infectious Diseases), one in Sukhumi, and one in Yakutsk (the affiliate of the Institute of Tuberculosis) (14). The main structure of the Academy, however, remains the same.

The institute is the basic research unit, the life and soul of the Academy. In scientific and research activity, it is directed by the bureau of the department, and in admin-

istrative matters, by the Presidium (8). Within the institute itself, the organization rests in the hands of three agents: the director of the institute, the scientific council, and the division of organization and methods.

Each institute is headed by a director, appointed by the Presidium for a term of 3 years, upon recommendation of the bureau of the department and with the formal approval of the General Assembly of the Academy. The director is personally responsible for the many-sided activity of his institute and for this reason he enjoys great authority. He may appoint or dismiss research workers and select members of the scientific council of the institute. Not all institute directors are Academy members; they may be appointed from other research institutions. In such cases, they have a deciding vote only in matters pertaining to their institute and an advisory vote on all other questions.

The director must be an experienced organizer. Depending on the size and needs of the institute, he is assisted by one or more deputy scientific directors who must be authorities in the particular field of medicine. He is also assisted by the scientific council of the institute.

The scientific council is an advisory body; the power to make decisions rests with the director, who serves as chairman. Other members are the deputy directors, the scientific secretary, the secretary of the Party organization, and a group of prominent specialists in the specific research field who may be with either the institute or an outside organization. Council members, selected by the director with the advice of the council, must be approved by the bureau of the department and by the Presidium.

The scientific council meets at least once a month to chart the main line of development for its institute and non-Academy institutes in a given area of research. It examines and evaluates the work of the institute, its laboratories, and individual scientists; it is also concerned with the staff, budget, and training of scientific cadres. The council evaluates dissertations and awards degrees, subject to the approval of higher authority.

Figure 3. Organization of the Academy of Medical Sciences: Departmental level

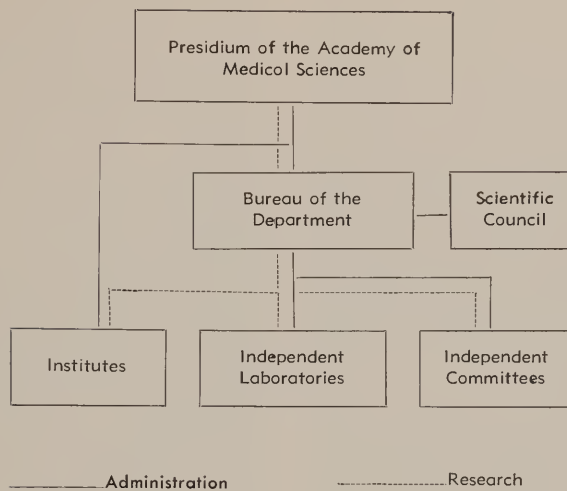
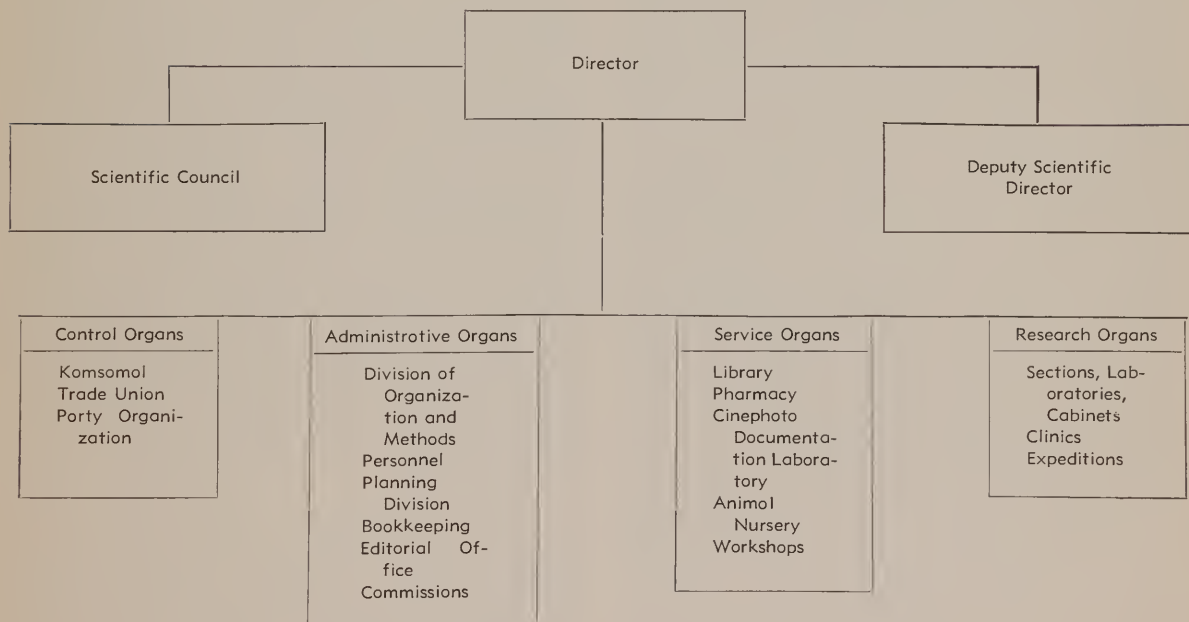


Figure 4. Organization of the Academy of Medical Sciences: Institute level



The Division of Organization and Methods (Organizatsionno-metodichskii otdel) is subordinate to the director but is supervised by the departmental bureau and the Department for Scientific Organization of the Presidium. The duties of the division are: (a) introduction of new organizational plans and methods of research, (b) consultation with non-Academy institutes in the preparation of research plans, and (c) liaison with non-Academy institutes and coordination of research in the field of the institute's specialization. Subject to approval by the bureau, the division organizes conferences and expeditions and disseminates information on the work of the institute (13b).

The work of the institute is examined and controlled on several levels. The annual report of activities is submitted first to the departmental bureau, then to the Commission on Scientific Planning of the Presidium.

An institute is generally organized on the principle of either a discipline (physiology, biology, or medical chemistry, for example) or a disease category (cancer, tuberculosis, and the like). An AMS institute is presumed to supervise scientific research in its field and thus be a leading and coordinating center. For this reason all institutes in the same research area, including institutes of the Union Republics, are supposed to report to the directing AMS institute. For example, the Institute of Industrial Hygiene and Occupational Diseases plans research on health protection of industrial workers and assigns problems to institutes of the Ministry of Health, those of the Union Republics, and to various higher medical schools. Other Academy institutes, however, have less influence on extramural research.

The institute is a complex organization, and its internal structure may vary to suit its particular tasks. Most institutes, however, have the following parts: sectors, divisions, clinics, laboratories, and even hospital wards. In administrative matters, the institute is directly subordinate to the Presidium. However, only a decree of the Council of Ministers can suspend the work of an institute or dispose of its property (fig. 4).

A full list of AMS institutes with the

names in Russian as well as English is given in Appendix A. Some of the most important research institutes under the Academy of Medical Sciences are the following:

Gamaleia Institute

Originally called the Institute of Bacteriology, Epidemiology, and Infectious Diseases, the Gamaleia Institute of Epidemiology and Microbiology is not only the largest and most active research center in Moscow, but it is also a center of production of serums and vaccines (10, 19, 20). It is therefore controlled not only by the AMS but also by the Ministry of Health, from which it receives annually some 10–12 million rubles profit from the production of vaccines. It covers several acres and occupies several large buildings on the outskirts of Moscow and a farm where most of the animals for serum production are kept. It has a staff of approximately 500 and many laboratories. A large amount of space is occupied by the Department of Oncology, with Prof. Zil'ber as its director.

The session of the institute held in November 1957 gives an account of its achievements during the 10 years of its existence within the AMS. Three hundred and eight participants and 34 institutions took part in the conference. The institute's director, Prof. M. D. Muromtsev, stated that it is the largest scientific institution of its type in the country. It has among its research workers 9 active and corresponding members of the AMS, 33 doctors, and 153 candidates in medical sciences. Scientific and industrial activity of the institute includes nine major problems, and it is the leading center responsible for the nationwide coordination of five of these (21).

Production quotas of vaccines are assigned by the Government. The institute distributes the required quotas through pharmacies and hospitals. The principal vaccines made in the Institute are live-virus vaccines against brucellosis and tularemia, which are widely used in Russia. In addition, the institute makes the standard calf-lymph vaccinia virus, typhoid vaccine, tetanus and diphtheria antitoxins, and the Q fever vaccine. Great effort is expended

in producing new vaccines and improving methods. The institute developed and perfected a method for drying live vaccines. The live cultures are freeze dried and then reconstituted for use. Shope reports that the institute has facilities for tank culture of enteric bacteria for vaccine. He saw tanks of 1,000-, 500-, and 250-liter capacity (10).

Institute of Experimental Medicine

The Institute of Experimental Medicine (IEM), one of the most important institutes of the AMS, is built around the core of the famous All-Union Institute of Experimental Medicine (VIEM) in Leningrad. It occupies several buildings, including a large apartment house for staff members. One of the chief founders was Pavlov, and later the institute became his research center. An excellent Pavlov museum is housed in a separate building. Pavlov's old laboratory and his chamber for observing animals have been preserved (10, 19, 20).

The institute has 11 sections (10) dealing with virology, microbiology, atherosclerosis, physiology, pharmacology, pathological physiology, general physiology, histology and embryology, biochemistry, radiobiology, and comparative physiology and pathology. It has a staff of more than 500, of whom 200 are research workers. Heads of 7 sections are academicians. Shope (10) mentions especially interesting work on seasonal encephalitis in the section of virology. The institute has recently recovered a new virus from a condition known as diphasic encephalomyelitis.

Research in the recent 7-year plan centers around the evolution of higher forms of reflexes and the correlation of neural and humoral regulations.

Cancer Institute

Established in Moscow in 1952, the Institute of Experimental Pathology and Therapy of Cancer serves as a cancer research center, with its primary assignment in the field of chemotherapy (10, 19, 20). It has several laboratories, a 60-bed ward, and a staff of 380, of whom 140 are professionals. It is divided into three departments. The De-

partment of Etiology is the largest, with the chief task of investigating viral etiology of cancer. It has a laboratory for the tissue culture of tumor viruses and a laboratory of tumor strains. The Department of Experimental Chemotherapy is subdivided into the Laboratory of Experimental Chemotherapy, the Laboratory of Antibiotics and Other Natural Substances, and the Laboratory of Experimental Hormonal Therapy. The Chemical Department consists of the Laboratory for the Synthesis of Synthetic Substances, the Laboratory for the Study of the Chemistry of Natural Substances, and the Laboratory of Analytical Chemistry (10, 20).

Institute of Infectious Diseases

Originally a part of the Institute of Bacteriology, Epidemiology, and Infectious diseases, the Institute of Infectious Diseases was made an independent institute in 1949 and relocated in Kiev (10, 20). It is housed in one of the buildings of the famous Lavra Monastery and consists of eight departments: virology, epidemiology, bacteriology, experimental physiology, pathology, clinical diagnostic laboratory, radiological laboratory, and a polyclinic with an outpatient dispensary for the followup of patients after discharge. It also has a 135-bed hospital and a staff of 300, of whom 50 are highly qualified specialists. The chief research interests until 1957 were pathogenesis, diagnosis, and treatment of scarlet fever, dysentery, and influenza. Today emphasis is on influenza, poliomyelitis, and infectious hepatitis. The laboratories and clinics work in close association. The institute conducts various symposiums and is responsible for instructing physicians of the Ukraine in the treatment of infectious diseases. Experiments on animals are also conducted.

Institute of the Brain

New, with good quarters and equipment, the Institute of the Brain has a 25-bed clinical section at the main city hospital and a staff of 28 scientists (22a). It studies all aspects of the brain: its structure, function, pathology, biochemistry, and pharmacology.

Pavlovian physiology is the chief subject of research, and experiments on animals are aimed at proving that a conditioned reflex, once established, can never be removed.

An important contribution of the institute was publication of "Atlas tsitoarkhitektoniki kory bol'shogo mozga cheloveka" ("Atlas of the Cyto-Architecture of the Cerebral Cortex"), edited by S. A. Sarkisov and published at Moscow in 1955.

Institute of Virology

Part of the old VIEM, the Ivanovskii Institute of Virology has a staff of 200, of whom 80 are professionals (10, 19, 20). It has contributed much to the study of viruses, the epidemiology of virus diseases, and the use of epidemic control measures.

A new method of producing dried vaccines for tickborne encephalitis has been developed, and live vaccines for influenza, mosquito fever, and other diseases have been produced. The institute has also produced a vaccine against rabies. A new type of poliomyelitis virus has been isolated, and Dr. Shubladze claims success in isolating the virus of multiple sclerosis. Much has been done in the investigation of hemorrhagic fevers and Q fever. The institute has published five symposiums, "Voprosy meditsinskoi virusologii" ("Problems of Medical Virology"), several monographs, and many articles (23).

Institute of Oncology

The Institute of Oncology is large, with a staff of 360 and a hospital with 108 beds (10, 20). It does research mainly with industrial carcinogens with the practical aim of establishing the source of carcinogenicity and eliminating the hazards in plants and industrial centers. The research also includes the pathology of tumors of various organs. From 1949 to 1955 the institute published eight symposiums, "Voprosy onkologii" ("Problems of Oncology"), especially important at that time, since no Russian journal on oncology was in existence.

Institute of Pathology and Therapy

Until 1957 called Medicobiological Station

at Sukhumi, the Institute of Experimental Pathology and Therapy is on the outskirts of Sukhumi on the Black Sea (10, 20, 24). It was founded some 30 years ago as an endocrinological institute. Administratively, it was formerly under the Presidium and formed a special independent unit. In 1957 it had 229 employees, 27 of whom were scientists (25). The four departments of the station are oncology, biology, radiology and physiology, and pathology of higher nervous activity. It also has several laboratories, including one devoted to the study of radiation sickness.

The chief interest of the institute is the study of physiology and neurophysiology, especially the neuroses. Lately it has included oncology, experimental medicine, and infectious diseases. For several years an important study was conducted on all aspects of dysentery.

Most of the research at this institute is conducted with monkeys bred on its own animal farm, which also breeds mice, rabbits, and guinea pigs. The colony of 850 monkeys represents about six generations, 60 percent of which were born there. Included are *Macacus rhesus*, mandrills, and Abyssinian monkeys. They are studied under semi-natural conditions. A special clinic is maintained for their medical care.

A summary of the research at the institute is given in a symposium entitled "Teoreticheskie i prakticheskie voprosy meditsinskoi biologii v eksperimente na obez'ianakh" ("Theoretical and Practical Problems of Experimental Medicine and Biology in Monkeys"), edited by I. A. Utkin and published in 1956.

Pavlov Institute

Special mention must be made of the field station on physiology in Pavlovo, formerly called Koltushi, a village near Leningrad. The station was established in 1923 for Pavlov's research, and the main building was designed by Pavlov. It became the Biological Station of VIEM, and Pavlov called it the "capital of the conditioned reflex." In 1944 it was incorporated into the AMS as the Institute of Evolutionary Physiology and

Pathology of Higher Nervous Activity. After the reorganization of the institute in 1950, it merged with the Pavlov Physiological Institute of the Academy of Sciences. Research here is concentrated in genetics, problems of heredity, and develop-

ment of the conditioned reflex. The institute seems to serve both the Academy of Sciences and the Academy of Medical Sciences. It has a staff of about 500 and was headed by K. M. Bykov until his death in 1959.

IV. Academy Personnel and Activities

Membership

The AMS consists of active, honorary, and corresponding members (*deistvitel'nyi chlen*, *pochetnyi chlen*, *chlen korrespondent*) and a staff of scientific associates (*nauchnye sotrudniki*). Active members are elected from those scientists who have made important contributions to medicine, honorary members are leading scientists from either the Soviet Union or other countries, while corresponding members may be outstanding Soviet scholars in the field of medicine.

Elections

The number of active and corresponding members is set by the Ministry of Health upon recommendation of the Presidium of the Academy. Vacancies are announced in the press. During the following 2 months, scientific institutions, scientific societies, and individuals may recommend in writing candidates for active and corresponding membership. Data on the proposed candidates are then submitted by the Personnel Department to the appropriate departments.

A special Commission of Experts on Election (*Ekspertnaia kommissia po vyboram*) headed by the academician-secretary of the department selects candidates. It considers the needs of the department, the qualifications of the candidate, and his "service to the State." For active members, approval by a two-thirds vote of the department must be followed by a majority vote of the General Assembly of the Academy by secret ballot. Corresponding

members are approved by the General Assembly of the Academy by an open vote (8, 26). Since 1952, active members have been selected exclusively from among the corresponding members.

The majority of the academicians are truly eminent senior scholars, elected for their outstanding achievements. However, a few candidates are recommended by the Ministry of Health or by a Party-controlled institution. Many consider T. Lysenko an example of such political rather than scientific merit.

The number of academicians is more or less stable. In 1951 the Academy had 91 active and 120 corresponding members (27a) and was expected to have nearly 100 active and 150 corresponding members in 1956 (28). However, in 1959 there were 91 active members (of whom 3 were women) and 105 corresponding members (of whom 9 were women). Of the 96 active members elected in 1946, 25 were 70 years or older, and only 6 were 50 years or younger. Their average age was 64. The Department of Hygiene, Microbiology, and Epidemiology showed no active member younger than 50. The average age of corresponding members was 50. Thus, medical science in 1946 was, and to a great degree still is, in the hands of older men, the immediate descendants of the brilliant generation of Russian intellectuals of the 19th century (29).

Rights and Duties

In the General Assembly of the AMS, active members have a deciding vote, while

corresponding members have only an advisory one. In a departmental general assembly all members of the department have an equal vote, except for the choosing of new members, which is the prerogative of active members.

An Academy member is given his research assignment by the Presidium of the Academy. Besides his chief research project his departmental bureau may require that he perform various other duties, such as reviewing manuscripts and participating in planning, expeditions, training scientific cadres, and ideological-political work.

Not all Academy members work in Academy institutes. Many are engaged in outside activities. In 1954 only 12 percent of the members of the Department of Clinical Medicine and 44 percent of those in the Department of Hygiene, Microbiology, and Epidemiology were engaged in the Academy's research (30a). Individual plans for scientists who work outside the Academy are a part of the Academy's research plan and must be approved by the bureau of the department to which the research worker belongs.

Members who work outside the Academy are supplied with equipment and materials needed for the research from special Academy funds. Once a year, each outside member must submit a detailed report of his activities to his departmental bureau for approval.

Staff Positions and Titles

The staff is classified under the following categories: scientific supervising personnel (nauchno-rukovodiaschiie kadry) consisting of the directors, the deputy scientific directors, and the scientific secretaries (uchenyi sekretar'); scientific research personnel (nauchno-issledovatel'skie kadry) consisting of heads of the divisions, sections, laboratories, or sectors and the senior or junior scientific associates (starshii ili mladshii nauchnyi sotrudnik); and associate scientific personnel (nauchno-vspomogatel'nyi personal), to which belong all laboratory technicians: laboratory technician with higher education (laborant s vysshim obrazovaniem), senior laboratory technician (starshii

laborant), laboratory technician (laborant), assistant (demonstrator or preparator), and laboratory attendant (laboratornyi sluzhitel'). Also, there are service personnel.

While Academy members direct and supervise research, the basic work is performed by scientific associates of various standings.

Like the Academy members, scientific associates are chosen competitively and appointed by the Scientific Council, subject to approval by the Presidium. The senior scientific associate is appointed for 7 years. He is responsible to his laboratory or division head for work assigned to him. A junior scientific associate is appointed for 5 years and works under the immediate supervision of the division or laboratory head, or of the senior scientific associate (8).

The ratios of senior to junior scientific associates and of professional to subprofessional personnel are a critical problem of the Academy. V. D. Timakov, the academician-secretary of the Academy, stated in 1955: "The ratio between senior and junior scientific workers averages 1:1.5. There are laboratories with two senior workers and no junior worker. The ratio between scientific and subprofessional workers is 1:1.1. This situation is, of course, impossible" (31a).

In all, the staff of the Academy today totals approximately 10,000. The increase in personnel may be seen from the following figures: from the founding of the AMS until January 1956, the number of research workers increased from 753 to 1,615; doctors of sciences, from 158 to 300, and candidates in sciences from 379 to 1,074 (32). The total staff in 1954 consisted of 7,792 persons; in 1955 it had increased to 8,014, and in the early part of 1957, 9,200 were employed by the Academy (33a).

Training and Degrees

One of the most important functions of the Academy of Medical Sciences is the education and training of medical research workers, not only for the AMS but also for other medical research organizations and for schools of higher medical education. Training given in AMS institutes may lead to degrees of candidate in and doctor of

medical, biological, and pharmaceutical sciences.

Degree of Candidate

The lowest scientific grade is the "aspirant" for the degree of candidate. An aspirant must be not over 40 years old and a graduate of a medical institution with 3 years of practical experience. He must show an aptitude for research and pass an oral and written entrance examination. Formerly, he had to be a Soviet citizen, but apparently this requirement was modified. There are now many aspirants from other countries, especially satellite countries (33, 34). The oral examination is on three subjects: principles of Marxism-Leninism, the specialty of the applicant, and one foreign language. The written examination covers the major medical subject of the applicant (7, 8). An aspirant's academic level at enrollment is between that of a B.S. and an M.S. in the United States.

The course, called "aspirantura," is guided and supervised by one to three Academy members or doctors of medical sciences and lasts 3 years. It is conducted according to a plan set up by the aspirant's scientific supervisor and the director of the institute, who are responsible for the aspirant's work. Twice a year, the aspirant's work is reviewed by the institute's scientific council. An annual progress report is presented by the director to the bureau of the department and further to the Personnel Department of the Presidium. The requirement of a dissertation was cancelled in 1955, but preferred assignments are given to those who write one.

The aspirant is not a regular student; he is a member of the research staff, chosen mainly from among clinical residents and senior laboratory technicians of the institutes. The aspirant receives a salary and has all the privileges of a staff member. Upon successful completion of the course he receives the degree of candidate in medical sciences, nearly the equivalent of an M.D. in the United States. In January 1955, 191 aspirants were in training. Pavlovian physiology is the most emphasized specialty.

Since 1952 about 30 percent of all aspirants have chosen this field (27b).

Doctor of Medical Sciences

The second step up the scientific ladder is the "doktorantura," a course for the degree of doctor of medical sciences which represents postgraduate work of a candidate. Doctor, the highest degree awarded in the Soviet Union, is higher in academic level than the M.D. in the United States.

A "doktorant" must be a Soviet citizen not over 40 years old, hold a candidate degree in medicine, and have demonstrated ability to perform independent research (8). His dissertation must demonstrate new and important scientific achievement. The work of a candidate for the doctor's degree is concentrated on research in his particular field and in writing his doctoral dissertation. Once a year the doktorant must give an account of his work to the scientific council of his institute. The period of study for the doctor's degree depends on the level of the doktorant's scientific training and the nature of his dissertation.

The number of doktorants and their specialties are determined by the Presidium of the AMS and approved by the Ministry of Health. In 1946 the Academy had 80 people working for the doctor's degree. It was planned to train 215 doctors and 600 candidates during the next 5 years. However, as the Academy's report for 1954 shows, this goal was not reached.

In 10 years, 1944-54, the Academy prepared only 181 doctors (31b). In other words, an average of one doctoral dissertation every 2 years in each institute seems to be the mean attained. There are institutes in which during their whole existence only one doctor has received his degree, such as the Institute of Therapy and the Institute of Organization of Public Health, for example. Only two doctors succeeded in the Institute of Pediatrics. However, in the Institute of Experimental Medicine 25 doctoral degrees were conferred; in the Institute of Epidemiology and Microbiology, 26; and in the Institute of Neurosurgery, 14.

Prior to 1955, dissertations were defended in the institute's scientific council, then evaluated and approved by the pertinent departmental scientific council and the Qualifications Commission of the Presidium. Advanced degrees were awarded in the institute's council after approval of candidates in medical sciences by the AMS Presidium and of doctors of medical sciences by the Higher Commission for Evaluation (Vysshiaia attestatsionnaia kommissia) of the Ministry of Health.

However, in August 1955, new rules for graduate study were set up (35). The Central Certification Commission of 77 members took over review of all dissertations, candidate's and doctor's alike. A tightening of the reins is seen in the following two regulations: (a) pay increase to an aspirant for a higher degree, hitherto automatic at departmental acceptance of the dissertation, is now deferred until the Central Certification Commission has accepted the dissertation; (b) any department approving a dissertation that is later rejected by the central commission forfeits for 2 years the right to accept aspirants who intend to defend dissertations.

Under the new decree the doctor's degree is awarded only to persons making a significant contribution to knowledge. The former allowance of 2 years' study and research for this has been abolished. Now the doktorant writes the dissertation while busy at work in a teaching or research position.

A doktorant is entitled to all privileges granted to scientific workers of comparable qualifications. He is provided with all material required for his work. He is assigned dormitory quarters and an allowance for purchase of scientific literature and given a 2-month summer vacation and 12 days of winter holiday with pay.

Clinical Residency

The Department of Clinical Medicine of the AMS offers a 3-year clinical residency or internship (klinicheskaiia ordinatura) for training physicians in various specialties. The quota of residents for all institutes is set by the Presidium and approved by the

Ministry of Health. Residents are chosen competitively from graduates of medical schools. The applicant for internship must be a Soviet citizen not over 30 years old. His training is supervised by the head of the clinical unit to which he is attached. He may continue his training as an aspirant if he shows ability and interest for research (8).

Other Obligatory Courses and Training

In addition to the administrative and academic duties, the staff of the AMS, be they academicians or clerks, are engaged in ideological education consisting of lectures, seminars, and courses on Marxist philosophy and Soviet politics. Special regulations to this effect were introduced after the Third General Assembly of the AMS in 1947 by the Presidium in a written resolution entitled: "Measures on Improvement of the Marxist-Leninist Education of Scientific Cadres of the Academy of Medical Sciences."

It was decided to make the directors of the institutes, with the aid of Party organizations personally responsible for improvement of the ideological education of scientific cadres (36a). Since that time various methods have been applied to carry out the resolution. From time to time the institutes report in the journal of the Academy what has been accomplished in this respect. Thus, the Institute of Experimental Medicine reported in 1948 (37):

In our institute two seminars are held regularly (twice a month) on methodology in natural sciences. The subject of these seminars is the analysis and criticism of bourgeois theories in the field of natural sciences and medicine from the Marxist positions. In addition, philosophical questions in relation to natural sciences were considered, such as "The Lenin Theory and its Significance for Biological Sciences."

Individual scientists are assigned to write papers on specific topics and to report on conferences and meetings. In the Chair of Philosophy, lectures on dialectic and historical Marxism "are held four times a month according to the established program for aspirants and scientific workers (55 persons) who are preparing for the candidate examination." In addition, discussions are

held regularly with research workers in regard to the application of Marxist-Leninist theory to the specific assignments of the scientist (36a).

The Department of Hygiene, Microbiology, and Epidemiology reports on its activity in this field as follows (38):

In all institutes and laboratories of the department, increased ideological and educational work and struggle for Marxist-Leninist methodology in science are noted. This work is planned and involves almost all scientific workers (90-95 percent) and also the administrative and technical staff.

In the past few years this activity has been less well advertised, but not abolished. In the journal of the Academy in 1956, we read as follows (39):

All institutes of the AMS were actively fulfilling the decisions of the 9th session of the AMS on the improvement of the ideological activity. . . . Scientific workers of the institutes studied the Marxist-Leninist theory, many attending the evening classes in Marxism-Leninism. The scientific councils of the universities discuss periodically problems of ideological and political education of the scientific cadres. . . . In the Laboratory of Experimental Physiology on Resuscitation Following Clinical Death, the following lectures were given: "Philosophical Significance of Chernyshevsky's Views on Natural Sciences" and "Metaphysical Nature of Virchow's Cell Pathology."

Academic Status and Privileges

Scientists, artists, and writers are, apart from Government officials, the best paid people in the Soviet Union. Members of the Academy of Sciences and the Academy of Medical Sciences enjoy not only the highest prestige in the country, but also very high remuneration and various additional privileges given only to a small group of citizens. The standard of living of scientists is very high, even luxurious, by Soviet standards, if compared with that of an ordinary physician.

According to Decree No. 514 of the People's Commissariat of March 6, 1946, the new salary for scientific medical workers was set up as follows (40a):

	<i>Rubles a month</i>
Director of an institute, if he is a professor or doctor of medical sciences	6,000
if he is a candidate in medical sciences	5,000
Deputy director, if he is a professor or doctor of medical sciences	5,000

if he is a candidate in medical sciences	4,000
Head of laboratory, department, sector, etc., if he is a professor or doctor of medical sciences	4,000
if he is a candidate in medical sciences	3,000
Senior scientific associate, if he is a doctor of medical sciences	3,500
if he is a candidate in medical sciences	2,800
Laboratory technician	700

These salaries are much higher than those received by general physicians or other medical workers. A university professor, if employed less than 5 years, receives 4,000 rubles a month; a director of a medical library, 1,500 rubles; a senior medical librarian, 750 rubles; a physician who is head of a department, cabinet, or laboratory in a medical institution other than the AMS receives 550 rubles if he has had less than 5 years' practice, and 850 rubles for 10 or more years' practice (40b).

In addition to whatever salary he received, an active member of the Academy in 1946 received 3,000 rubles a month, and a corresponding member, 1,500 rubles (\$750 and \$375 respectively, at the official rate of four rubles to the dollar or \$300 and \$150 at the tourist rate used in the Soviet Union in 1956-59, which corresponds better to the actual purchase value).

In addition to their salaries from AMS, personnel holding positions in other institutions received payment for their services. Other incentives include premiums for outstanding work, awards, honorary titles, and author's fees. In the field of surgery, three yearly awards, the Burdenko prizes (20,000 rubles) are granted; in ophthalmology, one yearly award, the Averbakh prize (20,000 rubles); triennially, the Gamaleia award (15,000 rubles) is granted for research in microbiology and epidemiology, and the Ivanovskii prize in virology.

Many members of the AMS hold several positions simultaneously, and draw multiple pay, although this practice has been continually denounced because the academicians spend too much time outside the Academy. For example, the late Academician K. M. Bykov, in addition to being the scientific supervisor of both the Division of

General Physiology of the Institute of Experimental Medicine of the AMS and of the Laboratory of Physiology and Pathology of Higher Nervous Activity at the Sukhumi Medicobiological Station, was also the director of the I. P. Pavlov Institute of Physiology at the Academy of Sciences, held the Chair of Physiology at the Naval Medical Academy, taught as a professor at Leningrad State University, and served on many advisory councils.

All active and corresponding members of the Academy, as well as directors of institutes, senior scientific associates with a doctor's degree, and heads of the departments, laboratories, or sectors, have a 48-day paid vacation. Senior research workers with the degree of candidate in sciences have 36 days of paid leave; junior research workers and senior laboratory workers have 24 days. Other privileges which Academy members enjoy include better-than-average living quarters assigned to them by the Government, a paid summer vacation in a health resort, a country cottage, and a higher pension (40a).

Publication of Information

The development of medical publishing in the AMS has been very uneven. After a promising start in the first years, it reached its peak in 1950, only to drop in 1953-54 to a low that lasted until 1956. Now the trend is again upward.

According to its constitution, one of the tasks of the AMS is "to publish journals, symposiums, monographs, dissertations, and other scientific works." To fulfill this requirement, a Section on Press and Propaganda was established within the Presidium. However, it soon became apparent that publishing and propaganda should be separated. In 1946 the Press and Propaganda Section was abolished and the Council on Editing and Publishing (Redaktsionno-izdatel'skii sovet—RISO) was made responsible for the publishing activity of the Academy.

The first Council on Editing and Publishing consisted of the prominent academician N. N. Anichkov as president, A. I. Anichkov and P. G. Sergeev as vice

presidents, and several members. On May 25, 1946, the Council of Ministers approved the proposed publishing house of the Academy. The year 1946 was devoted to organization, but plans for 1947 were well on the way.

During 1948-50 the output of Academy publications steadily increased. Planned for 1948 were 120 titles: 9 doctoral dissertations, 49 monographs, 33 symposiums, a series of papers on different topics called *Novosti meditsiny*, and several reference books and manuals. This plan was not carried out completely. However, the output of printed works during the first decade amounted to an average of 70 to 80 monographs, in addition to various serial publications (41). Most of the latter, however, ceased publication after 2 or 3 years (for example, *Novosti meditsiny*) or were taken over by other publishers (*Arkhiv patologii*). Two periodicals have been regularly issued to date: the *Vestnik Akademii meditsinskikh nauk SSSR* (*Journal of the Academy of Medical Sciences, USSR*), a monthly official publication of the Academy, devoted chiefly to official reports and questions of organization, and *Biulleten' eksperimental'noi biologii i meditsiny* (*Bulletin of Experimental Biology and Medicine*), the former VIEM publication taken over by the Academy in 1945 and issued monthly.

Accounts of research in the institutes are published as symposiums, transactions, or monographs in the monographic series, *Trudy Akademii meditsinskikh nauk SSSR* (*Transactions of the Academy of Medical Sciences, USSR*). Every year since 1955 the Academy has published abstracts of papers written in its institutes or by its members, whether or not the papers were published. These abstracts, *Annotatsii nauchnykh rabot Akademii meditsinskikh nauk SSSR* (*Annotations of the Scientific Works of the Academy of Medical Sciences, USSR*), give a good review of the research accomplishments in various fields during the particular year.

As in all other activities of the AMS, planning and ideological control have been the two major forces influencing publishing. Topics for publication depend largely on the

predetermined plan for the particular year. They are divided among institutes, committees, and individuals and may be treated as monographs, symposiums, or collections of papers read at a meeting or a conference.

The program of publishing for the fiscal year, as well as a long-range plan, is worked out by the Council on Editing and Publishing and approved by the plenary meeting. After that, the program is submitted for further approval to the Presidium. This triple control is supposed to insure both a high standard of work from the standpoint of subject and a high degree of control from the standpoint of ideological correctness. In addition, manuscripts are submitted to the most authoritative scientists living in Moscow for reviewing and editing before printing.

Ideological control of the Academy's publications was apparent as early as 1947, when the *Journal of the Academy of Medical Sciences* stated (41):

The Publishing Council was guided by the well-known decree of the Central Committee of the Communist Party on ideological problems, and took into consideration the general political situation. Some works of our scientists submitted for publication were not free from distortions of ideological and political character.

The Joint Pavlovian Session of the AMS and the Academy of Sciences held in 1950, at which the scientists were told bluntly to conform to the only true scientific Party line in physiology, also had a great effect on the publishing activity. During 1951-53 publication concentrated on Pavlovian physiology. The second edition of Pavlov's works, more than 50 monographs and pamphlets on Pavlovian physiology, and extensive bibliographies were published. Nonpartisan attitudes on political issues and lack of interest in "unmasking foreign critics of Pavlov" have always been sharply criticized. Even the Academy's own journal came under fire (36b):

Let us look at our *Vestnik*. Instead of being a militant leading organ of political and scientific information of the Academy, it has become a purely nonpolitical journal. . . . The main reason is that the leading people of the institutes and scientific councils do not pay enough attention, or rather any attention, to the education of their cadres. . . . Marxism-Leninism is the most important sci-

ence. It provides our cadres with the only scientific method of learning and action.

A blow to the publishing activity was the decision of the Ministry of Health in 1953 to concentrate all medical publishing in the State Medical Publishing House (Medgiz). The publishing house of the Academy and some other publishers were abolished and absorbed by Medgiz. All planning, final editing, and printing became the responsibility of Medgiz and the Scientific Council of the Ministry of Health, which controls the activity of Medgiz. The output of Medgiz increased greatly, but it was accomplished at the expense of the most valuable publications prepared by the top medical institutes.

Enthusiasm for publishing manifested by the Academy members in the first years faded away. Difficulties of an organizational nature, such as disappointment with editorial boards and the complicated triple system of reviewing manuscripts became even more evident, because of the additional level of supervision and the editing by Medgiz. The printing of manuscripts, which lagged behind the expected standard before the merger, became a greater problem. Criticism from within the Academy as well as from without and fear of responsibility made the situation bad indeed. The publication of *Trudy* dropped to approximately one volume a year in contrast to 31 volumes published from 1949 to 1954, and many manuscripts remained unpublished.

The ninth session of the AMS, held in 1954, revealed that 10 years after the founding of the Academy, publishing found itself where it had been at the beginning. L. A. Zil'ber, an active member of the Academy, said (30b):

We must solve the problem of publishing works of the members of the Academy. It is necessary to reorganize the Editing and Publishing Council. . . . We definitely must change the procedure of submitting articles to be published in journals. . . . It would be expedient to form a bureau within the Editing and Publishing Council of the Academy. I think that in case of discrepancies between the Publishing House and the Academy, no additional reviewing should be done by the Publishing House on articles that have been approved by the Editing and Publishing Council.

The corresponding member Ioffe stated (30b) :

It is absolutely necessary to publish annually symposiums of the AMS. We have many unpublished monographs. Much money has already been spent, and the monographs still have a vital importance.

In the resolution of the ninth session, it was decided “. . . to request the Presidium to examine the question of an independent publishing house in the system of the AMS” (42).

However, the situation did not improve during 1955–56. The total output of monographs was greatly reduced. The only important publishing activity in which the academicians participated was the Great Medical Encyclopedia, with A. N. Bakulev as the chief editor. Volume I of the medical encyclopedia appeared in 1956.

In 1957, at the 11th General Session of the Academy, Academician-Secretary V. D. Timakov said (33b) :

Unfortunately the situation here is rather unsatisfactory. The chief reason is the lack of our own publishing house. During the time when the Academy had its own publishing house, it issued yearly an average of 1,700–2,000 printer's sheets. [One printer's sheet is about 16 quarto pages of typescript.] Yet since Medgiz has taken over, the printing production of the Academy has dropped to 15 percent of the above figure. For instance, in 1949, the Publishing House of the AMS issued 134 titles and 1,820 printer's sheets while in 1955, Medgiz published only 28 works of the Academy.

It is not yet clear how the reorganization of medical planning started in 1957 will affect publishing. The Academy's hope to have again its own publishing house has not materialized. The procedure of reviewing manuscripts has apparently been changed,

with greater freedom for the Academy's Council on Editing and Publishing and less interference by Medgiz. Medgiz has promised also to give the Academy's publications more pages than it has had in the past. The plan for 1958 provided 1,600 printer's sheets (43), which is more than in any year after the merger with Medgiz, but less than in 1949–50.

Conferences and Expeditions

It is expected that Academy members and scientific associates participate in scientific conferences, meetings, and lectures on various levels—international conferences, national and local meetings, and even political rallies. They deliver many public lectures to popularize various problems of medicine and speak over the radio and on television. As many as 2,000 lectures, drawing large audiences, are being delivered yearly.

An important means of establishing liaison with remote parts of the country is the expeditions. A joint expedition (sovmestnaia ekspeditsiia) is composed of representatives of several institutes; a complex expedition (kompleksnaia ekspeditsiia) consists of specialists of various fields of medicine. Local physicians participate in the expeditions and are supposed to continue the work subsequently. The Secretariat of the Presidium has a special section on expeditions and together with the sponsoring institutes controls and supervises the work of the expeditions. Scientific expeditions, particularly those for the study of endemic diseases or epidemics, are organized for medical research under field conditions.

V. Research Planning

The Plan and Its Purpose

Medical research, like all other aspects of life in the Soviet Union, is not only highly centralized but is subject to strict governmental planning and control. Plans

for medical research are incorporated into the overall national economic plans and patterned in the same way. In 1947, when the AMS completed its first organizational phase, it started regulating its medical research in 5-year plans. These, together

with plans of the higher medical schools and other research institutes, became an integral part of the 5-year plans of the Ministry of Health, and were in turn integrated into the state industrial 5-year plans. For 1959-65 a 7-year plan is scheduled.

As a part of the Government's structure, medical research conforms with all regulations of the Government, including the state philosophy and politics as well as the national economy.

In regard to state philosophy, the famous Lenin slogan about the "Party-principle in sciences" is still one of the main tenets in any scientific investigation in the USSR. According to Lenin research is scientific only if it is based on dialectic-materialistic methodology and corresponds to the Marxist-Leninist ideology. The past president of the AMS, A. N. Bakulev, and the former academician-secretary, V. V. Parin, have said (44):

Soviet medicine is based on the deep theoretical foundations of the Marxist-Leninist methodology and the teachings of I. P. Pavlov. . . . These theoretical foundations secure a successful advancement of our sciences, distinguishing us from the foreign medicine, where many scientists are prisoners of the Freudian and other idealistic concepts.

Because medicine is considered important in the national economy, the medical 5- or 7-year plan must support the national 5- or 7-year plan for economic development. Today, the Academy must play a role in Khrushchev's plans to relocate industrial centers in the Asiatic Soviet Socialist Republics and to develop large cultural centers in Siberia. It was reported in *Meditinskii rabotnik* (45):

The resolutions of the February plenum of the Central Committee of the Communist Party and the theses of N. S. Khrushchev's report about the further improvement of the organization of industry and construction are directly related to the task of medicine. We must particularly review the distribution of the institutes, in order to relocate some scientific institutions from Moscow and Leningrad to other parts of the country, for instance to Siberia and the Urals.

Besides the official ideology and the national economy, the relative importance of medical problems must be considered in the preparation of the plans. I. V. Davydovskii, former vice president of the AMS, divides

medical problems into four priority groups (46):

1. The lowest priority is accorded diseases "of the past," such as plague, cholera, and typhoid fever.

2. More important for research are diseases which occur frequently but can be controlled, such as whooping cough, diphtheria, poliomyelitis, brucellosis, malaria, and tuberculosis.

3. Still greater attention is given to persistent diseases which have a tendency to increase, such as influenza, rheumatic fever, endogenous infections, malignant tumors, heart disease, and diseases of the nervous system.

4. Finally, radiation sickness is of vital importance for present and future research; it is given top priority.

Types of Plans

Plans vary in regard both to the time needed for accomplishment and to their scope. Long-range plans were the two 5-year plans and the present 7-year plan.

Within the long-range plans are short-term plans, such as the annual research plan and the even more detailed quarterly and monthly plans. New topics to be handled independently may also be introduced during the year.

The long-range plan, known as a general problem plan, is broadly stated. As the name indicates, it is based on problems rather than on the organizational unit of the Academy responsible for it. This means that each problem is studied from various points of view and requires the close cooperation of several institutes and of scientists in related fields. This principle of complexity (*kompleksnost'*) is stressed very strongly, to insure the study of all possible aspects of a problem: physiological, morphological, biochemical, microbiological, and others. The number of general problems has varied from 203 in 1946 (47) to 22 from 1956-60 (48). The newest plan has 46 problems scheduled.

The specific problem plan (*problemno-tematiceskii*), is the true working plan, reflecting the most important and pressing aspects of each problem. Some are broken

down even further. Each specific problem is worked out either by a responsible agency, an institute or its laboratory, or an individual scientist. There are also plans not directly related to the research project which deal with administration; for instance, plans for training personnel, or for scientific conferences, or for publication.

Responsibility and Composition

Until 1957 responsibility for fulfilling the problem plan rested with both the Presidium of the AMS and the Scientific Medical Council of the Ministry of Health. The Scientific Planning Commission was the liaison body between the Ministry and the Academy to coordinate the plans of both. Practically, however, this cooperation meant a tighter control of the Academy by the Ministry. The joint responsibility of the Scientific Medical Council on the one hand, and AMS on the other, caused many discrepancies and confusion. It was finally discussed in the 11th session of the AMS and abolished by the Ministry.

By an order of the Ministry of Health effective January 22, 1957, the Presidium of the AMS was charged with the preparation of a cumulative preliminary plan of medical research for the country. The plan entails coordinating medical research done by all institutes and laboratories of the AMS, its members, higher medical schools, and other national research organizations, including those in the satellite countries. For the current 7-year plan two vice presidents of the Presidium are assigned for this task (49). Vice President P. G. Sergiev coordinated research of the AMS with that of the Academy of Sciences, the Academy of Agricultural Sciences, the Academy of Municipal Economy, the academies of the Union Republics, and the scientific councils of the health ministries of the Union Republics. Vice President I. V. Davydovskii was responsible for planning in scientific research institutes and schools and for coordinating planning with the satellite countries.

Planning is done from the top down and from the bottom up. Planning from the top

starts with general directives, usually issued by a Party official at either a Party congress or a scientific conference. Details are worked out by the Ministry of Health, which refers the directives to the AMS. The AMS institutes are instructed to work out their research plans within this framework. The consulting body of the Presidium on questions of planning is the Commission of Scientific Planning. It accumulates and combines all the preliminary plans done on lower levels and presents them to the Presidium for approval. The responsibility for organizing the study of individual problems rests on the Problem Commission. There are as many Problem Commissions as there are problems.

Planning from the bottom starts in either the laboratories and institutes of the AMS or in other medical research institutions. It usually deals with specific aspects of problems already being studied and on which the institute wants to elaborate. The plans are forwarded through the institute's scientific council to its planning commission and further to the departmental bureaus. There they are coordinated with plans of individual researchers and of non-Academy institutions before being forwarded to the higher Scientific Planning Commission which directs them to the Presidium for approval and revision. Coordinated and revised plans are then sent by the Presidium to the Ministry of Health for final approval. Thus, the control of plan fulfillment is thorough and all embracing, consists of many interlocking components, and is carried out on all levels.

The principle of complexity and coordination is especially stressed in the current 7-year plan (11). Each problem must go through the following processes:

1. All three departments of the AMS must discuss all problems which are planned in the AMS and give comments and recommendations regarding particular aspects of the problem. The plans of the individual departments are then divided and sent to the leading institutes to be entrusted with the particular problems. It is stressed that all problems require the cooperation of other departments and institutes, and should be treated cooperatively.

2. The institutes meet with the corresponding problem commission, including the curator and specialists in the field, and a representative of the Scientific Planning Commission. Reports on the problems under consideration are read by the director of the institute and by the chairman of the problem commission. Recommendations are discussed and resolutions are forwarded to the Presidium of the AMS.

3. The chairman of the Scientific Planning Commission presents recommendations to the Presidium for approval. The Presidium discusses and makes its decisions on each problem individually.

4. Research plans on individual problems, broken down by topics, are forwarded to the Ministry of Health to be approved.

Difficulties and Deviations in Planning

Toward the end of each year, the AMS publishes a report of the particular problems planned, studied, and solved in its departments. Comparing reports of various years, one finds information not only on how the plans were fulfilled, but also on the achievements and deficiencies of the work and deviations from the approved plans.

A serious handicap for the Russian scientists in their research work is the ideological pattern on one hand and the instability of the Party line on the other. A sudden change in the Party line from above can cause a complete reorganization of plans and scientific units. Work has to be abandoned and sometimes new work begun. This happened for instance after the 1948 session of the Academy of Agricultural Sciences, when drastic Party-inspired changes caused complete reorganization of work in biological and related research and a purge of those scientists regarded as alien to the Party line. The Laboratory of Cytogenetics of the Institute of Cytology, Histology, and Embryology was abolished because it followed an "incorrect" and "unscientific" line. The Bureau of the Division of Biological Sciences of the Academy of Sciences was assigned the task of revising the syllabus in biological institutes, bearing in mind the interest of Michurinism.

Another sweeping reorganization took place after the joint session of the Academy of Sciences and the AMS on the teachings of Pavlov in 1950, causing a change in topics and methods of the research plans, as stated at the seventh session of the AMS in 1952 (50):

A fundamental change occurred in the theory and practice of Soviet medicine. The basic theoretical premises, the general direction, and methods of research correspond now in most cases to the basic principles of Pavlov's teaching. . . . The reorganization has found concrete forms first of all in the change of range of problems and topics of the institutes and laboratories. The main problem in scientific research is now the study of physiology and pathology of the higher nervous system. . . . Such reorganization . . . required a change in structure of basic institutes of the Academy.

Four institutes were wholly reorganized and two were transferred out of the Academy, thereby disrupting their planned work.

Less dangerous than disruption of the plan but as time consuming are unplanned "rush" assignments from the Ministry of Health and other institutions. The Department of Hygiene, Microbiology, and Epidemiology alone received 1,033 such priority demands during 1954, of which 995 were for the Institute of Industrial Hygiene and Occupational Diseases (31c). Some, such as the Ministry's request of December 9, 1954, to draw up measures for improving the sanitation and hygiene service to workers in the coal industry, require the participation of many scientists and the establishment of new laboratories. Obviously this hinders on-schedule performance of the regular planned work of the institutes.

A third factor which creates "deviations" is that research is done by human beings with their own preferences and ideas, and individual and subjective concepts creep in despite the all-embracing control and strict discipline. Justly or unjustly, several methods of "getting around the plan" have been officially blamed on the scientists.

One of the "deviations" is the so-called "mnogotemnost'" (assignment of too many topics). For instance, in 1946, 110 different topics were assigned to the Institute of Epidemiology and Microbiology alone (51).

Another form of defective research is

"mnogoproblemnost'" (multiproblem research), which means that the bureau presenting a plan to the Scientific Planning Commission relates its topic to anything that it could be even remotely related to. For example, the Institute of Pediatrics, instead of concentrating on general problems connected with child development, opened a laboratory on high blood pressure in early childhood and a laboratory on tuberculosis in children, in spite of the fact that there were other institutions concentrating on these problems.

An institute may do more and better work on a favorite problem, than on one it does not favor, even if it has a lower priority. Attacks on "academic individualism" and "insignificant topics" are quite frequent. Another deviation called "semeistvennost"—family-circle relationship—is denounced for the informal cooperation among co-workers and a mutual tolerance of mistakes and deviations.

Apparently, resistance against governmental control by individual scientists has been noticed, according to a statement made by Dr. Kovrigina, the former minister of health, at the 11th session of the General Assembly of the AMS. In criticizing the lack of coordination of the Presidium of the AMS and Ministry of Health in medical research work, she said (52):

In this respect a certain negative role was played by the not quite proper attitude of individual scientists who thought erroneously that the assignment of this or that particular topic, very important for the whole country, is "administrirovanie" [administration by injunction] in science. I think there is no need to explain, that in a planned socialist state there cannot be another method in the solution of specially important scientific problems.

Finally, since planning, coordination, and leadership were the responsibility not only of the AMS but also of other agencies, such as the Scientific Council of the Ministry of Health, scientific councils of the Federated Republics, and even individuals in the Ministry, duplication of research and lack of coordination became apparent.

Reorganization of 1957

After Stalin's death, when it became pos-

sible to criticize errors of the past, many faults were brought to light and the damage done to science was recognized openly. At the ninth session of the AMS, held in March 1955, Academician-Secretary V. D. Timakov gave a broad report (31) on the research activity for the year 1954 and its deficiencies, which may be summarized as follows:

1. The scientists have not pursued daring ideas, have not generalized practical experience, have not been seeking new paths, and have not been developing new theories.

2. Criticism and self-criticism have not always been on the academic level; instead, epithets like "idealist," "reactionary," and "anti-Pavlov" have been used.

3. It was incorrect to hold that all research work done abroad was bad, and it was not right to confine themselves within national limitations. It was not fair to consider Pasteur, Virchow, and Koch as reactionary scientists.

Deficiencies in planning may be summarized as follows:

1. Plans for scientific research included too many tasks.

2. Assignments were given to institutes without consideration of their technical ability to carry them out.

3. Assignments of projects too narrow in scope were also failures.

4. Several institutes worked on the same problem without consulting each other or cooperating.

5. External agencies (for instance, the Ministry of Health, the Central Committee of the Communist Party) interfered with the planning of the Academy by sending additional tasks even after plans for research had been composed, approved, and adopted.

In February 1957, the then minister of health, Mrs. M. D. Kovrigina, issued a decree about the "separation of functions of the Ministry of Health and the AMS" (52, 53). This measure was taken to improve the relationship of the AMS with the Ministry. The AMS was made fully responsible for research planning in the country and the coordination of work with other institutions. This does not mean, however, that overall control by the Ministry has been eliminated, since the AMS remains a component of the public health service, responsible to the Ministry of Health. For practical reasons, leading institutes in particular fields were given the task of controlling and coordinating the work in their specialities. One of the difficulties of the new scheme and especially of the principle of complexity is

that one institute may be entrusted with a task it is unable to fulfill, but must rely on another or on several other institutes. Since these may be thousands of miles away, communication may be rather difficult, and other difficulties may arise, as Davydovskii stated in his speech in 1957 (46):

We have to admit openly that we have not yet solved this problem [of cooperation] and the failure can be hardly explained by technical reasons only. Also, the relationship of the Ministry to the Academy has yet to be solved in practice. *Meditinskii rabotnik* occasionally complains that, as before, the local institutes receive instructions on scientific plans from the

scientific council of the Ministry, as well as from the leading institutes. The same is true about the reports on plan fulfillment of the research work.

Recent changes in the administration of planning may lead to changes in the organizational structure of the Academy. There is talk of creating branches of the AMS similar to those of the Academy of Sciences in the Union Republics. The chairman of the Scientific Medical Council of the Ministry of Health of the Uzbek SSR has suggested that the local medical research institutes of the Republics should be made institutes of the AMS (54).

VI. Trends in Medical Research

Post-Stalin Era

The new era of political liberalization that followed Stalin's death in March 1953 meant a significant change for medical research.

The hidden but strong opposition of Russian scientists to the political pressures of the Stalin era became evident during the annual sessions of the Academy of Sciences and the AMS. The climax of free expression was reached in 1956, after the 20th Congress of the Communist Party, where Khrushchev openly denounced Stalin. At a session of the Academy of Sciences that year, its president, A. N. Nesmeianov, denouncing the "cult of personality," stated: "Science needs freedom of research and freedom of opinions and not an official approbation of scientific theses, which could only tie up and hamper the development of science" (55). Other outstanding doctors and professors delivered similar speeches. Academician M. E. Omeilianskii criticized sharply the "mentor attitude" of philosophers in regard to researchers in the natural sciences. "A philosophical—perhaps a peremptory—shout, or even a philosophical bludgeon, called the criticism of idealism, was directed against those scientists who dared to say anything which seemed objectionable to the

philosophical mentor" (56).

Bitter attacks were launched against the "paralyzing orthodoxy" in biology and physiology, and personally against Lysenko, which finally led in 1956 to his resignation as head of the All-Union Academy of Agricultural Sciences. In the field of physiology, the dogmatic attitude of the Scientific Council headed by K. M. Bykov was openly criticized. Bykov and Ivanov-Smolenskii, the two previously unquestioned authorities, admitted their errors. Nesmeianov, at the meeting of the Academy of Science, spoke again about biological science (57a):

In general it needs to be said that the one-sided appraisal, or an attempt to establish an official appraisal by a majority of votes or by loud voices is not useful. We need free discussions, based on scientific argumentation, and for disputable cases we need experimental tests in conditions especially created for this purpose by a commission which would represent all opinions. . . . I think that our physiologists were following in past years the above-mentioned road which was not very useful. Nobody doubts that a strengthening of Pavlov's school in physiology and a broad utilization of his ideas and achievements in practice and research is a useful thing. But success in science is achieved not by denunciation but by harmonious, purposeful work. The achievements of our physiological institutes during past years were modest and one-sided even in the field of higher nervous activity.

Another prominent figure of the Stalin era, O. Lepeshinskaia, also became a target of heavy criticism. Her concept of the formation of cells from noncellular substances, formerly accepted as the only true theory, was heavily criticized. Virchow's cellular pathology was partly rehabilitated in the article by I. V. Davydovskii, "100 Years of Virchow's Cell Pathology" (58). These and other protests against the "monopoly in science" opened a new door for medical research.

After the ninth session of the Academy of Medical Sciences, international relations with foreign countries considerably widened. Many Russian scientists participated in international congresses and meetings abroad. In 1955, Russian delegations visited 22 Western countries. The increase of foreign visitors was remarkable. In 1952, only 7 foreign delegations visited the USSR, while 45 did so in 1955 and 70 in 1956. In 1955 the Soviet Union was admitted to the International Council of Scientific Unions at the seventh general assembly of the Council in Oslo.

The number of translations from foreign authors as well as lectures and critical discussions of works published abroad increased considerably. In Great Britain and in the United States, on the other hand, a systematic translation of Russian medical journals was begun. In the AMS a special editing board was created to cooperate with *Excerpta Medica*. Thirty leading scientists in various fields of the Academy were recommended for the editorial board of this journal. Far-reaching plans were made to exchange visitors, literature, and films between the Western countries and the AMS.

In 1957, a marked setback can be noted. Apparently, some scientists and editors went too far and had to be reminded that nothing had changed in the basic attitude toward research, and that Marxism-Leninism remained the only basic truth for scientific investigation. Nesmeianov, president of the Academy of Sciences, offered a word of caution (57b):

In criticizing our shortcomings we must at the same time reject very definitely any revisionistic

attempts toward Marxism-Leninism, any evidence of opportunism in science and philosophy. The fight against idealistic views and tendencies is not a special field of social sciences only. Scientists of all fields of research cannot and must not stand aside from the ideological struggle between communism and capitalism. Any indecision, any neutral position, or nonpolitic attitude, any objectivism, against which V. I. Lenin was always speaking, is today not to be tolerated in our midst.

In spite of this, and an increasing number of articles directed against "false" foreign concepts in medicine, such as Freudian theories, one great achievement still stands: the direct contact with medical research institutions abroad and with foreign physicians. Apparently, the experience of a few years of cooperation proved to be very useful, since in the summer of 1957 a special Division of International Scientific Relations was established in the AMS, headed by a member of the Presidium, S. A. Sarkisov.

Participation of Soviet doctors in international congresses has grown steadily. In 1957, 349 Soviet scientists took part in foreign conferences. Also many doctors, biologists, and other scientists from the Western countries are visiting the Soviet Union, attending conferences, meetings, and lectures, and speaking to a number of Russian scientists. They return convinced that science, both in the East and West, will profit from the cultural interchange of opinions and scientific cooperation.

Highlights in Research

Observations of the majority of Western visitors to the Soviet Union in recent years may be summarized in the statement of J. R. Paul (19a): "As one might suspect, one encounters in a large country scientific work which is both good, bad, and indifferent." This is especially true for the Soviet Union, since the pragmatism of the Soviet system must necessarily be favorable to successful development of some areas of medical science and discouraging to others. For lack of space only a few fields of medical research can be mentioned. The most characteristic have been selected.

Of all the fields of medical science, more attention has been paid to physiology than to any other branch of medicine. The Russian school of physiology, founded by Sechenov and Vvedenskii, and brought to a climax by Pavlov, started back in the second half of the 19th century, but special attention and support were given to it by the Soviet Government, for more than purely scientific reasons. The first to recognize the important political significance of the Pavlovian theory of conditioned reflexes was Lenin, according to whom the theory of conditioned reflexes dealt a deadly blow to metaphysical and spiritual life by revealing the materialistic basis of psychic activity. Pavlov was cast in the role of a pillar of the Soviet ideology by Soviet biographers and official philosophers only in the very last years of his life and after his death. The Great Medical Encyclopedia of 1928 expressed dissatisfaction with Pavlov's political views (59):

In spite of Pavlov's conservative political views and his frequently expressed disbelief in social construction, the Soviet Government has shown him maximum attention and care.

According to Pavlov's pupils (Babkin, Orbeli, Gantt), he was a daring and courageous individual, a critic of any political interference with science, no matter where it came from. Of great value in this respect is the statement of an outsider, the American professor, W. Horsley Gantt, who in his review of Pavlov's "Selected Works" published in 1955 in Moscow by the Foreign Languages Publishing House states (60):

"Selected Works" is indeed an apt title, for the picture is strongly distorted by a suitable selection of letters and conversations depicting him as a political supporter, as a materialist, and as an anti-Westerner, with the exclusion of the much greater volume of evidence available that Pavlov was a vehement critic of any political interference with science whether by Tsar or Commissar, an aggressive and enthusiastic investigator, now concurring with, now dissenting from his colleagues, whether Russian or foreign, depending upon the particular theory being considered.

Pavlov's closest pupil and successor in physiological research, the late Academician Leon A. Orbeli, wrote the following concern-

ing Pavlov's philosophical views in the Soviet journal *Priroda* (61):

In this respect I. P. Pavlov is a pure naturalist. During all his work he never made an attempt to interpret these questions from the point of view of either one of the existing philosophical systems. . . . The theory of conditioned reflexes concerns strictly natural sciences; it is a strictly empirical science; it develops certain physiological methods of research in respect to material, which is the object of natural science. For this reason one can try to interpret these facts and to use them for gnosiology. Any gnosologist will find for himself much that is interesting and valuable in this teaching as well as in the rest of the natural sciences.

The final interpretation of Pavlov was presented to the scientific public at the celebrated Scientific Session on the Physiological Teachings of Academician I. P. Pavlov, held from June 28 to July 4, 1950, a counterpart to the session of the Lenin All-Union Academy of Agricultural Sciences concerning biology and the Lysenko controversy (62, 63).

N. I. Grashchenkov, reviewing this period in the anniversary volume, "Sorok let Sovetskogo zdavookhraneniia" ("Forty Years of Soviet Public Health"), writes (64):

The post-war period is characterized by the intensified struggle for the raising of the ideological and theoretical level of the scientific research work in the field of biology and medicine. A serious influence on the development of the Soviet medical science were the decisions of the scientific session of the Lenin All-Union Academy of Agricultural Sciences which took place in 1948. On the basis of these decisions, the curricula in biological fields for the higher medical institutions were revised. So also was research work in some fields of medicine (physiology, pathologic physiology, neuropathology, etc.), in which such problems as heredity and relationship between the organism and the environment had been treated very often from a false and idealistic Weismanist (Mendel-Morgan) position.

A great influence for the ideological "case hardening" of medical science was the physiological theory of Academician I. P. Pavlov, a broad propaganda of it (starting with the Joint Session of the Academy of Sciences and the AMS in the middle of 1950 and its instilling into the field of theoretical and clinical medicine). . . . Pavlov's theory of the higher nervous system has been used since in clinical and prophylactic institutions.

An extended account of the session, published in Russian in a 734-page book in 1950, gives a full picture of the controversy, with Orbeli and Bykov as the chief protagonists. It was followed by the demotion of Orbeli

and others whose concepts were "fundamentally hostile to the materialistic spirit of the great physiologist" (62, 63).

The results of the session were similar to those of the session on genetics: (a) all branches of medicine had to adjust to Pavlovian theories and to the framework of ideological dogma; (b) Soviet medicine was isolated from its foreign counterparts; (c) the training programs of all physiological institutes and related fields were to be revised and new textbooks were to be written; and (d) the medical press was to publish literature on Pavlov's teachings.

To assure the achievement of these goals, the Scientific Council on Problems of the Physiological Teachings of Academician I. P. Pavlov was established with Bykov as head and given monopoly in the interpretation of Pavlov's heritage. The results of this sweeping reorganization were disclosed a few years later, especially at the ninth session of the AMS, held in 1955.

A. N. Bakulev, president of the Academy, admitted that despite success achieved in the clinical utilization of I. P. Pavlov's ideas on inhibition, various errors were made; for example, the frequent unjustified use of sleep therapy. Such errors have frequently led to discreditation or vulgarization of Pavlov's ideas.

V. D. Timakov, the academician-secretary, denounced the incorrect interpretation of "criticism" and "self-criticism" by persons who applied to their opponents epithets like "idealist," "reactionary," or "anti-Pavlovian" without justification. He complained that those critics attempted to persuade others not by scientific facts but by quotation from an authority (65).

A long report was delivered during the session by the previously disgraced L. A. Orbeli, who spoke on the controversial problem of inhibition. Orbeli not only failed to admit his errors, but even referred to foreign authorities such as Pflueger, Hering, and Sherrington. Other professors, such as Anokhin, Beritashvili, Kupalov, and Kosh-toiants, who had fallen from favor after the 1950 session also delivered reports. Thus, the deadlock imposed by the Party upon certain problems of physiology has been over-

come, and the scope of scientific research widened.

The impressions of American doctors who visited the USSR in 1956 are well summarized in the report of Dr. Chauncey D. Leake, published after his return to the United States (22b):

In the USSR physiology currently is broadly approached but narrowly programmed. . . . It includes the subdisciplines of biophysics, biochemistry, cellular and comparative physiology, embryology, genetics, pathology, pharmacology, neurology, and psychology. In spite of this comprehensive approach it seems to be sharply directed to a detailed extension of the Pavlovian canon involving every aspect of conditioned reflex activity. This direction seems to be exercised through the Academy of Sciences, USSR, and the Academy of Medical Sciences, USSR, both of which manage and support the physiology research laboratories.

Pavlov remains the pillar of the materialistic viewpoint, and progress in physiology is the chief concern of medical research, as seen from the statement of AMS President Bakulev, and Academician-Secretary Parin, published in the Academy's journal in 1957 (44):

It is our sacred duty to develop creatively the teaching of I. P. Pavlov in experimental as well as in clinical medicine. . . . In this important work, however, we must be careful not to make Pavlov's teaching a dogma on one hand, and vulgarize the teaching on the other hand.

How the Russian physiologists will maneuver between this Scylla and Charybdis in the future remains to be seen.

The ideological and political difficulties had, however, one good aspect. Concentration on experiments rather than on theory led to the accumulation of an enormous amount of experimental material, especially on conditioning. The experiments in "higher nervous activity" include a broad field of research. In American terminology the term embraces experimental, physiological, applied, and educational psychology, and, in part, neurology. Experiments are conducted on conditioning to various diseases, drugs, diets, operative rejuvenation, castration, sexual excitation, and many other factors. Great attention is paid to the neurology of learning, especially to the electroencephalographic correlates of learning which some psychologists regard as "pio-

neering work." Gregory Razran in his paper on Russian physiology reports (66):

The Russians have several laboratories of what they call evolutionary physiology in which they compare conditioning throughout almost the entire animal kingdom, from hydras to horses and from ascidians to apes.

Even animal training, and especially animal space training, is done under the supervision of leading scientists.

The field of psychology proper presents a totally different picture from that of psychophysiology (66, 67). Psychology has always been a stepchild in the Soviet Union, always in the role of proving its Marxist-Leninist-Stalinist nature and trying to reconcile Pavlov's views with the official ideology. Moreover, as Razran pointed out (66a): "... there is the long-standing drastic ban on intelligence testing, psychoanalysis, Gestalt psychology, and other to-be-shunned 'bourgeois-psychological' thought and practice systems. . . . There is little advancement in the field of psychology, if at all." (For a historical survey of psychology see reference 68.)

Resuscitation Following Clinical Death

The Laboratory of Experimental Physiology of the Institute of Experimental Medicine is conducting interesting research on resuscitation following clinical death. This research, headed by V. A. Negovskii, is being given a great deal of attention and unique treatment, partly for ideological reasons. The major emphasis is on heart massage, in addition to other treatment.

The chief work in this laboratory is concerned with studies on the "terminal status," hypothermia, and defibrillation. F. H. Ellis reports on an experiment in which a dog was brought back to life after having been "dead" for 5 minutes. However, according to Dr. Ellis (69):

Our definition of death and that of the Russians is at variance. This experiment consisted of bleeding a dog until corneal reflexes were absent and blood pressure could not be measured, and restoring these functions by the reinfusion of blood. An electrocardiogram taken during the procedure showed persistence of cardiac activity however, and the experiment actually consisted of the alleviation of exsanguinating shock, by means of replacement of blood.

Other experiments include clinical death after induced anemia, asphyxia, and thermal shock.

Surgery

Interest and achievements in surgery were chiefly the result of war and postwar surgical practice. The chief problems were methods of treating war trauma and wound infections. Great progress was made by Russian surgeons in treatment of injuries of the central nervous system, head, and spine. In treatment of the thorax, a widely used method was the vagosympathetic block, developed originally by A. V. Vishnevskii and later by N. N. Burdenko.

The experiences of the war years in surgery are given in the monumental work of I. V. Davydovskii, "Ognestrel'naia rana cheloveka" ("Gunshot Wounds in Man") published in 1950-54.

In the AMS, surgical research is conducted in the A. V. Vishnevskii Institute of Surgery in Moscow. Much attention has been given here to pathogenesis, compensatory powers of the organism, and various methods of anesthesia. Special attention is given to nervousism in surgical practice (70).

New methods in the treatment of war invalids have been developed in post-traumatic suppurative pleurisy, of active drainage of suppurative wounds, and novocain-penicillin block in suppurative and infectious processes as well as in endarteritis and trophic ulcer. Much research has been done on the treatment of shock and radiation sickness. Sleep therapy has been greatly used, especially electronarcosis.

There is a great interest in plastic and reconstructive surgery. According to the First All-Union Conference on the Problems of Tissue Incompatibility and Transplantation of Organs and Tissues, held in 1958, tissue therapy is regarded as one of today's most important problems. The central institute that directs and coordinates this research is the Institute of Experimental Biology, with Prof. I. N. Maiskii as director.

Extensive work was done in replanting extremities in higher animals. Improved apparatus and technique for vessel suturing permits transplantation of extremities and

vital organs such as the heart, lungs, and kidneys. Of greatest practical significance are the experiments in replantation of cornea, worked out by Filatov. It has been used widely for treatment of various skin diseases and for stimulation of healing of wounds. The problem of tissue preservation was discussed at the conference, and it was proposed to create tissue banks.

Many problems of tissue therapy have not yet been solved. Numerous experiments on the stable coalescence of homotransplants were unsuccessful because of tissue incompatibility, based on differences in antigen composition of the tissue donor and recipient (71).

For thoracic surgery, a special Institute of Thoracic Surgery was created within the AMS in 1955, under the supervision of the surgeon, A. A. Bakulev, who in 1957 was awarded the Lenin Prize for his achievements in heart surgery. Local anesthesia has been used also in correcting mitral stenosis, and for the first time in the USSR, bloodless heart surgery was conducted with the use of artificial blood circulation. An artificial lung-heart apparatus was constructed, which permits the exclusion of the lesser circulation (72). In general, according to F. H. Ellis, Jr., surgery in the Soviet Union is rather advanced, although in some branches, for instance cardiovascular surgery, the Russian surgeons have not kept pace with American progress, as they themselves have admitted (69). Since 1959, the Institute of Thoracic Surgery has been publishing a new journal, *Voprosy grudnoi khirurgii* (*Problems of Thoracic Surgery*).

Anesthesiology

Closely connected with surgery are problems of anesthesiology. Surprisingly enough, Soviet scientists have done little in this field except on techniques of local anesthesia. Soviet doctors admit in the Academy journal (73):

During the last 40 years little research has been done in the field of anesthesiology (except for local anesthesia). We are behind in theoretic research of narcosis, as we have almost no specialists in the physiology, the biochemistry, the neurohistochemistry of narcosis. . . . The wide application of local anesthesia can be explained by the simplicity and

the availability of methods of local anesthesia. . . . Modern anesthesia has been applied to date only in a limited number of surgical clinics, chiefly in the capitals. . . . The insufficient application of modern anesthesia in the USSR can be explained by (a) poor anesthesia apparatus and equipment in the surgical institutions, (b) inadequate supplies of preparations and drugs used in modern anesthesia, and (c) scarcity of professional anesthesiologists.

The institute responsible for research in anesthesiology is the Institute of Thoracic Surgery of the AMS. Currently, the laboratory on anesthesiology is studying the effect of anesthesia on metabolism and the application of encephalography under modern narcosis. Also the A.V. Vishnevskii Institute of Surgery is highly active in research in local anesthesiology. It developed the infiltration anesthesia for the operation on all parts of the body, including the thorax. For his work on local anesthesia, A. A. Vishnevskii, the director of the institute, was given the international Leriche prize.

Infectious Diseases and Parasitology

Infectious diseases, always a problem in the Soviet Union, have required extensive research in vaccinothrapy. Today, according to Soviet sources, diseases such as plague, cholera, and smallpox have been eliminated. The most acute problem now is influenza. For influenza prophylaxis a special dried live vaccine has been introduced.

A. A. Smorodintsev, a corresponding member of the Academy, working in the Institute of Experimental Medicine, considers the subcutaneous vaccination against influenza which is practiced in the United States and other Western countries "quite effective, but very difficult to perform, because it requires repeated injections of the preparation, which is very complicated in respect to chemological production and very expensive. . . . More realistic is the mass immunization with the live vaccine offered by us, introduced directly into the respiratory tract" (74). The live vaccine affects the multiplication of the virus in the mucous membrane of the nose and throat and increases the local and general anti-influenza immunity. Live vaccines are being used also against colds, tularemia, and undulant fever. Shubladze and her staff

have recently claimed successful isolation of the virus of multiple sclerosis.

For tickborne encephalitis, a dried vaccine has been used. Important work in the field of the prophylaxis of encephalitis was done by E. N. Pavlovskii and his staff. In infectious diseases in children, special attention was given to vaccination against whooping cough by a vaccine developed by the Gamalia Institute of Epidemiology and Microbiology.

For the research on poliomyelitis, a special Institute for the Study of Poliomyelitis at the AMS was established.

According to Grashchenkov, malaria ceased to be a "mass" illness for various reasons—use of chemical therapeutic preparations and mechanical and biological extermination of mosquitoes, as well as improved sanitary methods. One of the most prominent scientists in the field of malaria treatment, E. N. Tareev, proposed rational treatment of malaria on the basis of a deeper study of the inner organs during this illness.

In connection with the treatment of wounds by antibiotics after the war, considerable attention was given to antibiotic research. Several institutes working in this direction in recent years have produced biomyacin, terramycin, tetracycline, albamyacin, ekomolin, and other new antibiotics.

Hygiene and Prophylaxis

Among the more important problems scheduled for the recent 7-year plan are those of hygiene, sanitation, and prophylaxis. The interest centers especially on the prevention of occupational diseases which could seriously disrupt the industrial plan of the country.

Soviet hygienists claim that the Soviet Union is far ahead of the United States in its research on air pollution and its effect on the health of the population. It is true

that their studies on air and water pollution have been accelerated in recent years. Several expeditions and sessions were devoted to occupational diseases and occupational hygiene. In Baku, the oil center of the USSR, there was held in 1958 a combined conference devoted to occupational diseases in the oil industry. In Berezovsk of the Sverdlovsk Oblast, another conference devoted to the study of silicosis in Ural mines was held in the research station of the Institute of Labor Hygiene and Occupational Diseases of the AMS.

Work has been started to make the much-needed improvements in the sanitary conditions of rural areas and industrial centers.

Acclimatization

The new 7-year plan also gives special attention to the problem of acclimatization. This includes research on the climate and nosography of individual geographic regions, their flora and fauna, physiological reactions of the human organism, and regional pathology. At a special conference on problems of acclimatization held in Irkutsk in 1957, it was decided to form a special problem commission at the AMS, to establish research bases in different parts of the country, and to coordinate the work with the affiliates of the Academy of Sciences, which will do the nonmedical background research. In 1957 a complex expedition headed by 10 scientists was sent to the Arctic (Tiksi). A preliminary report on the findings was published in the AMS journal (75).

Special attention is given to the regions of Central Asia, where big new industrial centers produced a concentration of manpower. Problems of sanitation and adjustment to heat (in the South) and to cold (in Siberia) have been on the agenda at the Institute of General and Communal Hygiene of the AMS for several years.

VII. Objectives of the Seven-Year Plan, 1959-65

The plans for the next 7 years provide for a great expansion in physical as well as research facilities of the Academy.

By 1965, it is intended that the staff of the Academy reach a total of 13,800 persons, and the budget will be more than 300 million rubles. New institutes are planned for medical radiology, hygiene and occupational diseases, neurology, biological and medical chemistry, pharmacology and chemotherapy, and gerontology. Three hundred and ninety-two million rubles are to be allocated for this purpose (14).

In the field of publishing, the Academy will assist the State Medical Publishing House in the publication of medical literature. There are plans to increase publication of medical books and journals 2½ times in comparison with 1958. While 6,000 quires (printer's sheets) for books and 4,500 for journals are scheduled for 1959, by 1965 it is hoped that 13,000-17,000 quires for books and 8,000 for journals may be reached. In addition, several multivolume books on different specialities are planned, some 90 volumes in all (76a).

As to the organizational structure of the AMS, several important changes are in progress. A new statute had been proposed and was supposed to have been approved sometime in 1959. A great change was abolishing of the Scientific Medical Council at the Ministry of Health and transferring all its functions to the Academy. In this way the Presidium of the Academy became a direct agency of the Ministry for medical research.

The relationship with the Union Republics remains rather complicated and confused. In early 1959, at the session of the ministers of health of the Union Republics it was decided to strengthen the authority and responsibility of the local ministries by delegating more power to their scientific councils. Proper forms of communication and relation-

ship between the institutes of the Academy, of the AMS problem commissions, and those of the ministries have not yet been worked out. For this reason, it has been proposed that there should be established within the Academy a committee to study the organizational structure and find better ways of coordinating the work of these agencies. It is likely that branches of the AMS will be created in the Union Republics in the near future (76b).

In specific areas of medical investigation, one of the basic tasks in the 7-year plan is the elimination of infectious diseases. It was decided to create a special committee to promote elimination of infectious diseases, which will be in charge of planning research in this field. The Gamaleia Institute of Epidemiology and Microbiology will be working on polyvaccines, first of all against childhood infections, like the one for pertussis-diphtheria-tetanus in a single preparation, and vaccines with poliomyelitis antigen as one of its components. Tests of some new antibiotics are also scheduled.

Another field to be emphasized for research is that of labor hygiene and occupational diseases, with the practical object of reducing absenteeism from work due to illness. In this group of diseases fall influenza, inflammation of upper respiratory tract, angina, intoxication due to new chemicals, and effects of radioactive rays. Studies on water and air pollution, nutrition, and dietetics are aimed to improve the working conditions, especially in big industrial plants. Closely connected with labor production is the problem of acclimatization and the further development of virgin lands. More research in the Arctic areas is foreseen, especially the study of soil hygiene and combating of endemic diseases.

Other fields of special interest are genetics and biology, especially in connection with the

achievements of modern physics and chemistry, like nuclear physics, radioactive tracers, and electronics.

Of cardiovascular diseases, intensified studies of hypertension, rheumatic fever, atherosclerosis, coronary insufficiency, and myocardial infarct are stressed. A resolution was passed by the Presidium to establish under the AMS an All-Union cardiologic society, in order to coordinate all research in this area.

To foster research in neoplasms, a special Institute of Experimental and Clinical Oncology is planned in Moscow, and a Scientific Council on Cancer has been established under the Presidium.

Finally, the 21st Congress of the Communist Party has demanded an increase

in the ideological and educational aspect of Pavlov's physiology, in order to resist the "reactionary" tendencies of the Western scientists, who want "to revise Pavlov's theory about the higher nervous system, to replace it by the idealistic Freudian theories, or to reconcile the two" (14b). The Institute of Experimental Medicine in Leningrad has been entrusted with the task of intensifying research in this area. Electrophysiological, morphological, biochemical, and other methods will be used in research on the mechanism of the conditioned reflex, on the most complex forms of higher nervous activity in animals, on the pathological nervous processes in old age, and similar problems.

VIII. Summary

Although a comparatively new organization, the Academy of Medical Sciences of the USSR, established in 1944, has inherited and kept the rich traditions of Russian scientific endeavor from as far back as 1725, when L. L. Blumentrost, physician to the Czar Peter the Great, devised the first project of the Academy of Sciences and became its first president.

Through the chain of many brilliant names, such as Sechenov, Pirogov, Bekhterev, and Pavlov, and the efforts of their followers, Russian medicine has attained a high standing. Many pupils and followers of Pavlov, such as the late Orbeli, have been leading scientists in the AMS and have strived to insure the highest standards in the research work of the Academy.

After the initial period of organization and consolidation of its activities and the second period of Party-inspired ideological and political polemics in connection with Pavlov's physiological theory, the AMS evolved finally in its most fruitful post-Stalin era as a powerful and authoritative institution.

The three departments of the AMS, with a wide network of research institutes, laboratories, and clinics cover almost all fields of medical research. Almost 250 active and corresponding members of the Academy are scientists of the highest professional standing. Training given in the Academy to prospective candidates for the degree of Doctor in Medical Sciences provides the country with highly qualified scientific staff.

The Academy is in charge of planning and coordinating research done not only in Central Russia, but in all the Union Republics as well. The leading institutes of the Academy, such as the Gamaleia Institute of Epidemiology and Microbiology in Moscow, the Institute of Experimental Medicine in Leningrad, the Ivanovskii Institute of Virology in Moscow and others, are the largest research centers in their field in medicine in the USSR. Significant progress has been achieved in the field of surgery, in physiological experiments with animals, in tissue therapy and transplantation of organs, in the combating of infectious diseases, and

in the introduction of new vaccines. Generous funds are provided for medical research. Academy members enjoy great social prestige and financial security.

It would be wrong to assume, however, that Soviet medicine is following the same road as Western medicine. The AMS is only one link in the highly centralized and planned system. It is subordinate to and controlled by the Ministry of Health. Dialectic materi-

alism is still proclaimed as the basis of all scientific research. The scholars have to abide by the official ideology and centralized planning and must be prepared to adapt themselves to possible variations in the Party line. However, as long as the present desire to excel in all scientific and technological fields exists, it may be assumed that the AMS will be given enough Government support to achieve further significant accomplishment.

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Appendix A

Research Institutes of the Academy of Medical Sciences of the USSR

(The names of the institutes and directors are from sources covering the period 1956-58. During 1959, however, some new institutes were added.)

Department of Medicobiological Sciences (Otdelenie mediko-biologicheskikh nauk) OMBN

Academician-Secretary: Prof. V. N. Orekhovich

Institute of Biological and Medical Chemistry (Institut biologicheskoi i meditsinskoi khimii) IBMKH

Moscow G-117, Pogodinskaia ul., 10
Director: V. N. Orekhovich

Institute of the Brain (Institut mozga)

Moscow B-120, per. Obukha, 5
Director: S. A. Sarkisov

Institute of Experimental Biology (Institut eksperimental'noi biologii) IEB

Moscow D-57, Baltiiskii poselok, 13
Director: I. N. Maiskii

Institute of Experimental Medicine (Institut eksperimental'noi meditsiny) IEM

Leningrad, Kirovskii prospekt, 69/71
Director: D. A. Biriukov

Institute of Experimental Pathology and Therapy (Institut eksperimental'noi patologii i terapii) formerly the Sukhumi Medicobiological Station (Sukhumskaiia mediko-biologicheskaiia stantsiia)

Sukhumi (Abkhazskaia ASSR) Ostroumovskoe uchilishche, 1/74 or Gora Trapetsiia
Director: I. A. Utkin

Institute of Normal and Pathological Physiology (Institut normal'noi i patologicheskoi fiziologii)

Moscow D-57, Baltiiskii poselok, 13
Director: V. N. Chernigovskii

Institute of Pathophysiology and Experimental Therapy (Institut patologicheskoi fiziologii i eksperimental'noi terapii)

Moscow
Director: A. D. Speranskii

Institute of Pharmacology, Experimental Chemotherapy, and Chemoprophylaxis (Institut farmakologii, eksperimental'noi khimioterapii i khimioprofilaktiki)

Moscow D-57, Baltiiskii poselok, 13
Director: V. V. Zakusov

Laboratory of Experimental Physiology for Resuscitation Following Clinical Death (Laboratoriia eksperimental'noi fiziologii po ozhivleniiu organizma)

Moscow, ul. 25 Oktiabria, 9
Head: V. A. Negovskii

Department of Clinical Medicine (Otdelenie klinicheskoi meditsiny) OKM

Academician-Secretary: Prof. B. G. Egorov

N. N. Burdenko Institute of Neurosurgery (Institut neirokhirurgii im. N. N. Burdenko) INKH

Moscow 47, 5-aia Tverskaiia-Iamskaia, 5
Director: B. G. Egorov

Institute of Chest (Thoracic) Surgery (Institut grudnoi (torakal'noi) khirurgii)

Moscow, Bol'shaia Kaluzhskaia, 8
Director: A. N. Bakulev

Institute of Experimental Pathology and Therapy of Cancer (Institut eksperimental'noi patologii i terapii raka)

Moscow, 3-aia Meshchanskaia ul., 61/2, korpus 9
Director: N. N. Blokhin

Institute of Infectious Diseases (Institut infektsionnykh boleznei) IIB

Kiev, Tsitadel' 11
Director: I. L. Bogdanov

Institute of Neurology (Institut nevrologii) IN

Moscow ZH-54, ul. Shchipok, 6/8 (Bol'shaia Serpukhovskaia ul., 27)
Director: N. V. Kononov

Institute of Obstetrics and Gynecology (Institut akusherstva i ginekologii) IA

Leningrad 164, Vasil'evskii Ostrov, liniia Mendeleva, 3.
Director: P. A. Beloshapko

Institute of Oncology (Institut onkologii) IO

Leningrad 129, Kamennyi Ostrov, 2-aia Berezhovskaya ul., 3/5
Director: A. I. Serebrov

Institute of Pediatrics (Institut pediatrii) IPED

Moscow 28, Ust'inskii proezd, 1/2
Director: O. D. Sokolova-Ponomareva

Institute for the Study of Poliomyelitis (Institut po izucheniiu poliomieliita)

Moscow 118, 8-aia ul. Sokolnoi Gory, 15, korpus 2
Director: M. P. Chumakov

Institute of Therapy (Institut terapii) ITER

Moscow, Bol'shaia Serpukhovskaia ul., 27
Director: A. L. Miasnikov

Institute of Tuberculosis (Institut tuberkuleza) IT

Moscow I-128, Platforma Iauza, Iaroslavskoi Zheleznoi dorogi
Director: Z. A. Lebedeva

Yakutsk Affiliate (Yukutskii filial)

Yakutsk (Yakutsk ASSR)
Director: E. N. Andreev

A. V. Vishnevskii Institute of Surgery (Institut khirurgii im. A. V. Vishnevskogo) IKH

Moscow, Bol'shaia Serpukhovskaia ul., 27.
Director: A. A. Vishnevskii

Department of Hygiene, Microbiology, and Epidemiology (Otdelenie gigeny, mikrobiologii i epidemiologii) OGMiE

Academician-Secretary: Prof. A. A. Letavet

N. F. Gamaleia Institute of Epidemiology and Microbiology (Institut epidemiologii i mikrobiologii im. N. F. Gamaleia)

Moscow D-182, Shchukinskaia ul., 33

Director: S. N. Muromtsev

Institute of Industrial Hygiene and Occupational Diseases (Institut gigeny truda i profzabolevanii)

Moscow, ul. Obukha, 14

Director: A. A. Letavet

Institute of Nutrition (Institut pitaniia) IPIT

Moscow G-117, Pogodinskaia ul., 10

Director: O. P. Molchanova

Institute for the Search of New Antibiotics (Institut po izyskaniu novykh antibiotikov)

Moscow, Bol'shaia Pirogovskaia ul., 11

Director: S. D. Iudintsev

D. I. Ivanovskii Institute of Virology (Institut virusologii im. D. I. Ivanovskogo)

Moscow D-57, Baltiiskii poselok, 13

Director: P. N. Kosiakov

A. N. Sysin Institute of General and Communal Hygiene (Institut obshchei i kommunal'noi gigeny im. A. N. Sysina) IOKG

Moscow G-117, Pogodinskaia ul., 10

Acting Director: N. N. Litvinov

Appendix B

Membership

(Date following department designation indicates year of election to the Academy.)

Active Members of the Academy of Medical Sciences, January 1959

Anichkov, Nikolai Nikolaevich: b. 1885, *pathological anatomy*, OMBN 1944, Leningrad.

Anichkov, Sergei Viktorovich: b. 1892, *pharmacology*, OMBN 1950, Leningrad.

Anokhin, Petr Kuz'mich: b. 1898, *physiology*, OMBN 1945, Moscow.

Bagdasarov, Andrei Arkad'evich: b. 1897, *hematology*, OMBN 1957 (corr. m. 1945), Moscow.

Bakulev, Aleksandr Nikolaevich: b. 1890, *surgery*, OKM 1948 (corr. m. 1946), Moscow.

Beklemishev, Vladimir Nikolaevich: b. 1890, *zoology*, OGMiE 1945, Moscow.

Beritashvili, Ivan Solomonovich: b. 1884, *physiology*, OMBN 1944, Tbilisi.

Braitsev, Vasilii Romanovich: b. 1878, *surgery*, OKM 1945, Moscow.

Brannshtein, Aleksandr Evseevich: b. 1902, *biochemistry*, OMBN 1945, Moscow.

Bykov, Konstantin Mikhailovich: b. 1886, d. 1959, *physiology*, OMBN 1944, Leningrad.

Chernigovskii, Vladimir Nikolaevich: b. 1907, *physiology*, OMBN 1950 (corr. m. 1948), Moscow.

Chernorntskii, Mikhail Vasil'evich: b. 1884, *internal medicine*, OKM 1945, Leningrad.

Davidenkov, Sergei Nikolaevich: b. 1880, *neuropathology*, OKM 1945, Leningrad.

Davydovskii, Ippolit Vasil'evich: b. 1887, *pathological anatomy and general pathology*, OMBN 1944, Moscow.

Dombrovskaia, Iuliia Fominichna: b. 1890, *pediatrics*, OKM 1953 (corr. m. 1945), Moscow.

Egorov, Boris Grigor'evich: b. 1892, *neurosurgery*, OKM 1953 (corr. m. 1948), Moscow.

Engel'gardt, Vladimir Aleksandrovich: b. 1894, *biochemistry*, OMBN 1944, Moscow.

Frenkel', Zakharii Grigor'evich: b. 1869, *hygiene, public health, and sanitary statistics*, OGMiE 1945, Leningrad.

Giliarovskii, Vasilii Alekseevich: b. 1875, d. 1959, *psychiatry*, OKM 1944, Moscow.

Girgolav, Semen Semenovich: b. 1881, *surgery*, OKM 1944, Leningrad.

Gorev, Nikolai Nikolaevich: b. 1900, *pathological physiology*, OMBN 1953 (corr. m. 1945), Kiev.

Grashchenkov, Nikolai Ivanovich: b. 1898, *neurology*, OKM 1944, Moscow.

Grinshtein, Aleksandr Mikhailovich: b. 1881, *neuropathology*, OKM 1945, OMBN 1945, Moscow.

Gromashevskii, Lev Vasil'evich: b. 1887, *epidemiology*, OGMiE 1944, Kiev.

Ivanov, Vadim Nikolaevich: b. 1892, *internal medicine*, OKM 1953 (corr. m. 1946), Kiev.

Ivanov-Smolenskii, Anatolii Georgievich: b. 1895, *pathological physiology*, OMBN 1950, Moscow.

Khlopin, Nikolai Grigor'evich: b. 1897, *histology and embryology*, OMBN 1945, Leningrad.

Konovalov, Nikolai Vasil'evich: b. 1900, *neuropathology*, OKM 1950 (corr. m. 1946), Moscow.

Kornev, Petr Georgievich: b. 1883, *surgery*, OKM 1944, Leningrad.

Krasnogorskii, Nikolai Ivanovich: b. 1882, *pediatrics*, OKM 1945, Leningrad.

Krotkov, Fedor Grigor'evich: b. 1896, *hygiene*, OGMiE 1944, Moscow.

Kupalov, Petr Stepanovich: b. 1888, *physiology*, OMBN 1946, Leningrad.

Kupriianov, Petr Andreevich: b. 1893, *surgery*, OKM 1944, Leningrad.

Lavrov, Boris Aleksandrovich: b. 1884, *physiology and vitaminology*, OGMiE 1945, Moscow.

- Lepeshinskaia, Ol'ga Borisovna: b. 1871, *biology*, OMBN 1950, Moscow.
- Letavet, Avgust Andreevich: b. 1893, *hygiene*, OGMiE 1950 (corr. m. 1945), Moscow.
- Malinovskii, Mikhail Sergeevich: b. 1880, *obstetrics and gynecology*, OKM 1944, Moscow.
- Man'kovskii, Boris Nikitich: b. 1883, *neuropathology*, OKM 1944, Kiev.
- Mardashev, Sergei Rnfovich: b. 1906, *biochemistry*, OMBN 1957 (corr. m. 1950), Moscow.
- Maslov, Mikhail Stepanovich: b. 1885, *pediatrics*, OKM 1944, Leningrad.
- Molchanov, Vasilii Ivanovich: b. 1868, *pediatrics*, OKM 1945, Moscow.
- Morozov, Mikhail Akimovich: b. 1879, *microbiology*, OGMiE 1945, Moscow.
- Miasnikov, Aleksandr Leonidovich: b. 1899, *internal medicine*, OKM 1948, Moscow.
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